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COMMUNICATIONS

PHACOERISIS: OBSERVATIONS ON THE TECHNIQUE, WITH A REPORT ON 115 CONSECUTIVE CASES

BY

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"PHACOERISIS consists in withdrawing the crystalline lens complete in its capsule, by its anterior surface from the eye, without either traction or violence to the zonula, and extracting it completely, without having produced ectopias or traumatism to intraocular structures."[1]

Extraction of the lens in its capsule by means of a suction apparatus was first done in 1910 by Vard Hulen[3] of San Francisco, who reported six successful cases. It is, however, to the prolonged and careful scientific research work of Barraquer, of Barcelona, that the operation owes its present position amongst surgical procedures for the removal of the cataractous lens in its capsule. In July, 1917, Barraquer submitted a statement to the Royal Academies of Medicine and Surgery of Madrid and Barcelona, explaining the process invented by him for the total extraction of cataract. In 1919, he published the statistics of his first 1,000 cases, disregarding the first group of patients, whose cases served to determine the technique. His results were remarkably good, he having only four cases of iris prolapse, four cases of burst capsule, and 70 per cent. of cases with visual acuity between 6/9 and 6/6[4].

In 1922, M. de Saint Martin[5] reported his first 20 cases, in which 70 per cent. gave visual acuteness superior or equal to 6/9, as

against 41 per cent., resulting from a series of 20 extractions carried out by the classical method. This operator, however, underestimates the difficulties attendant on phacoerisis, when he says: "The new process is neither difficult in its execution nor dangerous for the eye. It only requires the scrupulous carrying out of the different operative periods and a certain dexterity which is soon acquired." I agree with him, however, when he says: "One of the great advantages of the process consists in the facility in extracting cataracts not completely mature."

In 1922, Gallemaerts[6] reported 46 cases performed by the Barraquer method, gave his visual results, and enumerated accidents which occurred during and after the operation. At the Annual Congress of the Ophthalmological Society held in 1923, Affleck Greeves and Foster Moore[7] both read papers dealing with the results of a series of operations in which they made use of the Barraquer technique. Affleck Greeves, in his report, states that, out of a total of 51 cases, 31 cases of which were successful, there were 7 cases of burst capsule, all of which required needling later, and 13 cases in which the lens had to be removed with the spoon, slight vitreous loss resulting. He concludes that in successful cases the results leave nothing to be desired; a black pupil free from membrane and excellent visual acuity being secured. The method, in his opinion, however, is less certain in results than is the case in extraction with capsulotomy. Foster Moore, dealing with the results following operation in 33 cases, reports 22 successful, 5 with vitreous loss, but with excellent visual results. The remaining 11 had to be completed by some other method, and in 9 of these there was some vitreous loss. He concludes that the advantage in the method lies in the absence of post-operative iritis and in obtaining a uniform black pupil, while the outstanding disadvantage is the frequency of vitreous loss, amounting in these cases to 22.7 per cent. The operation, in his opinion, contains a considerable element of danger, especially in the matter of vitreous loss, so that for general use it must be regarded as inferior to older methods, but he adds that for immature and sclerosed lenses, the Barraquer operation has distinct advantages of its own.

Outside India, speaking generally, the intracapsular operation is still regarded as a dangerous procedure, and even in India, where opportunities for trying out new methods for the removal of the lens are numerous, it is not yet generally accepted as the operation of choice. It is not surprising then, that even in India phacoerisis has been taken up, tried and given up, either because failure has followed the first few cases[8], or because the percentage of successes has not warranted its continuance in preference to tried methods[9].

During the months of January and February, 1924, Dr. Holland, of Quetta, afforded me the unique opportunity of examining all

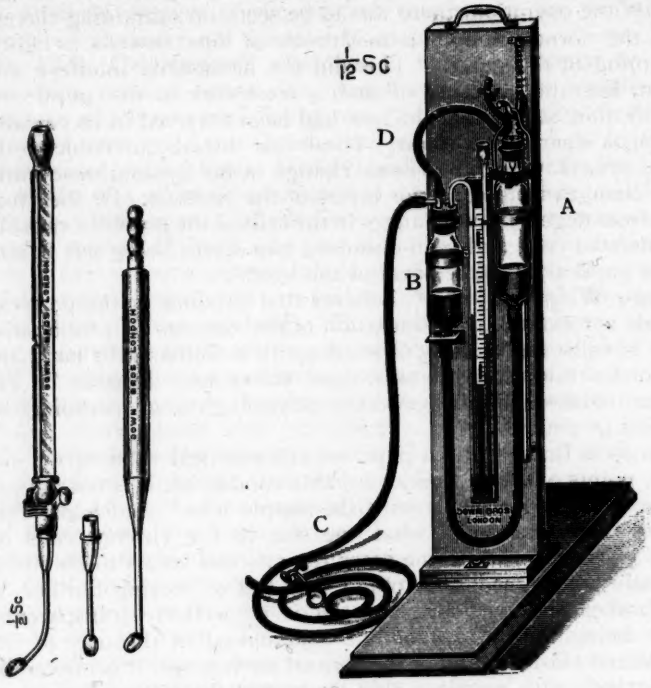
cases of cataract operated upon in his eye clinic in Shikarpur, Sind. I examined 1,455 cases of cataract; in 1,209 cases the lenses were removed in the capsule; in 69, capsulotomy was performed; and 177 were operated upon by Barraquer's method. Of the latter, 115 were done by me, and form the subject of this report.

I had previously noted in a few cases that, when the lens was removed in the capsule, no complications having occurred during or after the operation, there was to be seen, on examining the eye with the corneal loupe, a meshwork of fine threads or fibres remaining in the pupil. This did not necessarily interfere with vision, but the presence of such a meshwork in the pupil was inexplicable, seeing that the lens had been removed in its capsule, leaving a clear, black pupil. These fine threads, invisible to the naked eye, may be due to some change in the hyaloid membrane, or to changes in the anterior layers of the vitreous. Or they may arise from degenerative changes in the cells of the posterior capsule, degenerated cells and semi-dissolved lens fibres being left behind in the pupil after the removal of the lens[10].

Major Wright, I.M.S.[9], believes that "trauma to the posterior capsule is followed by the invasion of the vitreous by proliferative types of cells, and a study of results with a Gullstrand's lamp and the corneal microscope in such cases shows such invasion." The nature of these fibrils, whether physiological or pathological, remains in doubt.

Harrison Butler[11], in a paper on the practical value of the slit-lamp, points out that, "under suitable conditions, it is not difficult to see the vitreous fibrils with the simple lens," and adds, "the correct interpretation of what one sees in the vitreous calls for much experience. In some cases the vitreous seems to be almost optically homogeneous, in others it is full of floating fibrillae, of membranes and particles, and yet it is perfectly transparent." Such being the opinion of one experienced in the use of the Gullstrand slit-lamp and of the corneal microscope, it is impossible to conclude with certainty that trauma to the vitreous or to the posterior capsule is responsible for the changes seen in the anterior layers of the vitreous or in the hyaloid membrane. Further detailed study, with the slit-lamp and corneal microscope, of the conditions obtaining in the vitreous after removal of the cataractous or sclerosed lens, is necessary before the origin of such changes can be attributed to any one operative procedure. In my series of 115 cases, operated upon by the Barraquer method, these changes were definitely less prevalent than I found them to be in eyes operated upon by other methods. While conclusions cannot be arrived at on such a limited series of cases, yet the fact is suggestive and worth fuller investigation. Such changes were found in 90 out of the 1,455 cases examined, with no disturbance in visual

acuity, and in 6 with some subsequent defect in vision. A further point of interest was the appearance in the pupil, clear to the naked eye, of fine dust-like pigmentary deposits; in some cases numerous, scattered, or in the form of a fine ring, visible only if the pupil were dilated or semi-dilated. These deposits were noted in 23 cases, but in one case only, in which the pigment was scattered over a



Erisiphacs and Vacuum Apparatus used.

fine cobweb-like membrane, was there any interference with vision. Such post-operative complications, found after very careful search, cannot detract from the value of the intracapsular operation; but any operative procedure, which tends to leave behind in the pupil anything, which may interfere with vision, falls short of the ideal method, which consists in "cutting the zonula and in drawing the entire cataract with gentleness to the exterior, without either pressure, stretching or violence, producing neither ectopias nor traumatism of the iris or of the ciliary body"[1].

The only technique at present followed, which approaches this ideal, is that of Barraquer. That many may fail in accomplishing

what Barraquer does is not to be wondered at, for the expert at the capsulotomy operation may never become skilled in the intracapsular method; and again, he who has become familiar with the latter may never master phacoerisis. He who would attempt the removal of the lens with the erisiphac, must be reasonably skilled in the technique to be followed when complications arise during the expression of the lens by Smith's method.

The Apparatus

The apparatus used in the series of cases reported below was that devised by Messrs. Down Bros., London. It consists of a mercury chamber A, which can be raised and lowered on a ratchet; a fixed mercury chamber B; a mercury manometer with a centimetre scale ranging from zero to 60 cms., all fixed in a very compact and practical way on a portable wooden stand. The two mercury chambers are connected by means of a piece of stout rubber tubing, sufficiently strong to withstand the weight of 300 c.c. of mercury, namely, ten pounds. The fixed mercury chamber is provided with a good rubber cork, through which are bored two holes, for the passage of two small metal tubes, one a single-way, the other a two-way tube. These, of course, must fit accurately, as must also the rubber cork, otherwise the vacuum pressure would never be maintained. The single-way tube is connected with the manometer. From the two-way tube hang two pieces of rubber tubing provided with clips; one piece, D, opens to the air, while to the free end of the other piece, C, which should be about six feet in length, the erisiphac is attached. To make the vacuum pressure, all the clips are opened, and the chamber A is raised as high as it will go on the ratchet. When the mercury has drained from A into B, the clips on tubes C and D are closed and the chamber A is lowered, the movement of the mercury in the manometer showing the amount of vacuum pressure created in chamber B. Used in this way, the maximum vacuum pressure which could be obtained with a fall of 10 inches was 25 cms. Hg. This was found to be inadequate. By raising the fixed chamber B four inches on the stand, and raising and lowering A to the full extent of the connecting rubber tube, in this case 20 inches, giving a fall of 40 inches, a vacuum pressure of 45 cms. Hg. could be obtained. The clip on the connecting tube is then closed, and the chamber A hung on the ratchet.

I mention these details merely to show how easily minor defects in the apparatus were overcome. The reasons for their presence are obvious, and they could be obviated by increasing the length of the wooden stand, raising the fixed mercury chamber to a higher level and increasing the length of the ratchet.

Messrs. Down Bros. have now made an apparatus which will give vacuum pressures up to 60 cms. Hg. This differs from the original one merely in the length of the ratchet, the volume capacity of the chambers, and in the weight of mercury used.

The chambers have a cubic capacity of 550 c.c., the ratchet allows of a fall of 31 inches, and the weight of mercury used is 15 lbs. Rubber tubing, 8 mm. in diameter and of 2 mm. bore is used to connect the chambers.

The vacuum pressure having been made, passage to it is given by releasing the clip on the tube C. In actual use, however, the nearer the clip is to the free end of the tube, that is, to the erisiphac, the better, because, as will be explained later, it is very essential that the vacuum pressure be transmitted rapidly and instantaneously to the lens.

The Pressure.—The pressure to be used is scientifically worked out by Barraquer for each case ,and it is found to vary from 45 to 70 cms. Hg., according to the elasticity of the lens and the state of maturity of the cataract. The degree of vacuum pressure to be employed depends also to a certain extent on the age of the patient, but it is only by the continual practice of making a careful preliminary examination of the physical conditions of the lens in each case, that the necessary experience will be gained, which will enable the operator to assess the proper vacuum pressure to be employed. The accuracy of Colonel Smith's[12] statement that the Barraquer operation does not seem applicable to Morgagnian and all classes of cataracts with liquid cortex, is not borne out by results. Intumescent cataracts formed quite a proportion of the cases operated upon, and burst capsules were not the rule with a pressure of 45 cms. Hg. That capsules burst is not so much due to excessive pressure as to speed and faulty technique on the part of the operator.

Instruments

The Knife.—Any type of von Graefe knife may be used, but a knife with a long handle and a long blade is much to be preferred. With such a knife the incision can be made in one sweep. The knives used were supplied by Down Bros., after the pattern of those made by Moria, of Paris; the shaft 10 cms., and the blade 3.5 cms. in length. A long handle, allowing of a long hold, gives the operator a much greater command of the knife and greater freedom in making the incision.

The Needle.—The needle used for the conjunctival suture is of the finest, just over fully curved on a diameter of 9 mm., and admitting only of the finest black silk being used. The suture is tied with forceps and not with the fingers to avoid any possible risk of sepsis.

The Speculum.—Smith's lid speculum was used, but is replaced after the incision has been made and the conjunctival suture inserted, by Fisher's double hook. If Fisher's double hook were used throughout the operation, fewer lenses would be extruded on completion of the incision, an accident which is not infrequently seen, when the speculum is used.

The Iris Forceps and Scissors.—For the peripheral iridectomy, if the operator wishes to make one, the iris forceps of von Hess and the iris scissors of Pascheff must be used if a fine button-hole is to be made.

The Erisiphac.—The erisiphac (*erio*=I draw, *phakos*=the lens) used was that devised by Greene, made by Müller, of San Francisco, the suction cup of which is circular and 5 mm. in diameter. The advantage of this instrument over that used by Barraquer lies in its pencil-like form, the shaft not being complicated by a thickened portion containing valves and a button for giving passage to the vacuum. In spite of this, Barraquer's erisiphac must remain the better instrument, because with it the operator has sole control of the vacuum, while with Müller's erisiphac he must depend on an assistant to open and close the tube giving passage to the vacuum. Some, using Müller's erisiphac, control the vacuum with the foot on the rubber tube, but this is very unsatisfactory, because if the passage to the vacuum pressure is to be given rapidly and instantaneously, then the nearer the control is to the suction cup the more efficiently will this be carried out. Herein lies another advantage in the use of Barraquer's instrument.

Light.—Reflected light is essential. Barraquer uses a fixed photophore, but any good type of electric torch will serve the purpose.

Preparation of the Patient

At first Barraquer's method of preparing the patient was followed. The patient's face is washed with soap and water, and dried with a piece of lint moistened with spirit or petrol. Between the lids an ointment containing 5 per cent. of the chlorides of euphthalmin and cocain is deposited by means of a glass rod. This produces the necessary dilatation of the pupil and anaesthesia of the cornea in from one to one and a half hours. When the pupil has dilated sufficiently, cocain hydrochloride 4 per cent. is instilled, also a drop of adrenalin, 1:1,000. Five minutes later this is repeated, and a subconjunctival injection of three minims of cocain 2 per cent. is given in the region of the upper corneal limbus. Ten minutes later the operation may be commenced.

Two factors brought about a change in the procedure followed in the preparation of the patient.

1. The potency of the euphthalmin failing, atropin 1 per cent. was used.
2. The instillation of adrenalin causing drying of the cornea, and thus dulling its lustre, a clear view of the iris margin could not be obtained during the application of the erisiphac to the lens.

To obviate this, 1 :1,000 adrenalin combined with an equal part of cocain 4 per cent. was injected subconjunctivally, two to three minims of the solution being used. It was found that this tended to cause dilatation of the pupil, more especially in the region of the injection, a factor which led to the cocain-adrenalin solution being injected below the corneal margin, this tending to dilate the pupil downwards. The vertically oval shape of the pupil helped materially in applying the erisiphac to the lens, clear of the free margin of the iris.

Another factor which led to the cocain-adrenalin solution being injected at the lower corneal limbus was the frequent occurrence of a subconjunctival haemorrhage, the result of the needle piercing a conjunctival vessel. This occurring at the upper corneal limbus gave rise to minor troubles on the completion of the section, blood escaping, for example, into the anterior chamber and blurring the edge of the iris. This made one hesitate to use a conjunctival suture in case more blood might enter the anterior chamber during its insertion.

The tedious preparation, which the patient has to undergo, tends to weary the busy operator, and it was realized that if phacoerisis was to be taken up seriously, a simpler method of preparing the patient had to be devised and carried out.

My plan at present is as follows : On the day of admission to the ward, if the eyes are reasonably clean, silver nitrate 1 per cent. is instilled, and the same evening a drop of atropin 1 per cent. The following morning the pupil is dilated, but to ensure that the dilatation will remain, after the section of the cornea and the iridectomy have been completed, atropin is instilled three hours before the operation. One hour before the operation an injection of morphia grs. $\frac{1}{4}$ is given. Anaesthesia of the cornea is obtained by the instillation of cocain 4 per cent. four times, at intervals of five minutes. After the first instillation of cocain, two or three drops of the cocain-adrenalin solution are instilled or preferably injected subconjunctivally, at the lower corneal limbus as described above. If the pupil is sufficiently dilated, and if one instillation of adrenalin has blanched the conjunctiva, so that on making the conjunctival flap haemorrhage is unlikely to occur, then the use of the cocain-adrenalin injection may be omitted. The patient is then placed on the table, and the conjunctival sac washed with perchloride of mercury, 1 :5,000, any excess of perchloride lying

in the lower conjunctival fornix being carefully removed with a little sterile water or by means of a medicine dropper. This is important more especially if stronger solutions of mercury are used, because of the tendency of strong solutions to cause mercurial clouding of the cornea, which, however, usually clears up in four or five days without treatment.

Operative Procedure

The Incision.—A good, clean, large rather than small incision is a *sine quâ non* in any cataract operation.

Having examined critically about 1,500 cases of cataract extraction, I am convinced that a small incision is more liable to cause

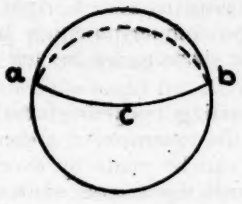


Fig. 1.

Fig. 2.

eversion of the corneal flap than is a large one. I have seen several cases of everted flap follow a small, badly placed incision, but in no case have I seen such an accident occur where the incision has been large. The section can with safety occupy half the corneal circumference, and if the upper eyelid is carefully placed over the cornea when the operation is finished, and the eye kept closed by means of a moist pad of wool until the dressing has been applied, there is no danger of the corneal flap becoming everted. The eyelid must be kept closed, otherwise blinking on the part of the patient is liable to cause eversion of the flap.

That a small incision can cause eversion of the flap can easily be explained. When the lens, too big for the incision, engages the margins of the wound, tension is put on the cornea, the line of greatest tension lying on that part of the corneal surface stretching between the puncture and the counter-puncture, see Figs. 1 and 2. When pressure is applied with the hook to the lower part of the cornea, the lens, being held up at the line of greatest tension

a c b, causes the cornea to bulge, however slightly, below the line. As the lens moulds itself through the aperture between the upper or scleral edge of the wound and the line of greatest tension, *a c b*, the corneal flap is hinged outwards to allow more room for the lens to escape. The tension relieved, the cornea along *a c b* returns to its normal condition, and a thin groove *c*, concave outwards, forms along the line *a c b*. This groove acts exactly like a hinge on which the corneal flap tends to swing, and the tendency is for it to swing outwards. Even if no eversion occurs, and the flap is moulded back into place, a linear depression remains across the cornea for several days, evidence of the bending of the corneal surface during extraction. If the operator intends to hold the erisiphac in his right hand during the extraction, then the incision for the right eye should commence 1 mm. or more below the horizontal diameter of the cornea, the counter-puncture being similarly 1 mm. or more above the horizontal diameter. In the case of the left eye, the operator being as stated, right handed, the puncture will be above and the counter-puncture below the horizontal diameter. If the operator elects to use his left hand the conditions will be reversed.

If there is no likelihood of bleeding occurring, then a conjunctival flap should be made for the insertion of a conjunctival suture. A large conjunctival flap can be made by diverting the blade of the knife backwards towards the sclera, while finishing the section of the cornea, the size of the flap being controlled by merely turning the blade of the knife outwards and cutting out. The suture is then inserted and drawn clear of the corneal wound during the extraction of the lens.

Another method is to make the conjunctival flap first, dissecting a small crescentic flap off the sclerotic at the upper corneal limbus, inserting the suture before making the incision. The flap is stroked forwards on to the corneal margin, and the loop of the stitch drawn to one side while the incision is made and the lens extracted.

The advantages in this procedure are two:

1. If the patient is restless, the making of the flap and the insertion of the suture can be carried out without fear of the lens being extruded or of vitreous being lost, due to the patient squeezing his lids.
2. If bleeding should occur, one can instil adrenalin and wait till all bleeding has ceased, and so avoid those complications to which blood in the anterior chamber tends to give rise.

To my mind the disadvantage in making a conjunctival flap lies in the close proximity of the upper part of the incision to the base of the iris. I have never seen iris prolapse when the conjunctival suture has been used, but I have seen vertically oval shaped pupils

persist after its use, probably due to the fact that the periphery of the iris has been caught up in the wound at one point. The ideal procedure would be to keep the incision in the corneal limbus and to use the corneal suture of Suarez de Mendosa, or Kalt's[13] suture. Considering the usual unhealthy condition of eyelids in India, I have not so far used the corneal stitch, the risk of infection being too great. Barraquer[1] lays great stress on the use of the corneal suture as being the best means of preventing iris prolapse.

If there is any reason to think that a conjunctival flap is to cause the slightest haemorrhage, the action of the adrenalin being insufficient, then the incision should be kept in the sclero-corneal junction throughout. The merest trace of blood in the anterior chamber will cause the novice in phacoerisis no end of trouble. It is far from a simple matter to remove blood from the anterior chamber and to keep it from re-entering, more especially if the iridectomy has given rise to bleeding. The manipulation necessary for the removal of the blood stimulates the iris to contract, and when the pupil is cleared it is usually found to be too small to admit of the erisiphac being placed on the lens with safety. Even if perchance the pupil remain dilated, the chances are all in favour of more blood entering the anterior chamber during the performance of the iridectomy or later during the insertion of the erisiphac itself.

I am convinced of the value of a good clean incision, and above all, of the necessity of making it slowly and gently, and if possible, in one movement, dropping the hand well down when the counter-puncture has been made, and sweeping the point of the knife upwards over the bridge of the nose, or over that point where the bridge of the nose meets the eyebrows. This, of course, is not always possible in deeply-set eyes, but should be aimed at. This slow sweeping incision plays an important rôle, not yet sufficiently recognized, in the prevention of iris prolapse.

The Iridectomy.—Wherein lies the value of an iridectomy? Some operators remove the lens in its capsule through a non-dilated pupil and then perform iridectomy, usually the peripheral iridectomy of Hess. Why? To lessen the danger of the re-forming aqueous, in escaping through the wound, carrying iris before it, and giving rise to the bugbear of all cataract operations—iris prolapse.

Barraquer[1] has reduced iris prolapse to 0.4 per cent. or less by performing the peripheral iridectomy of Hess and by using a conjunctival or corneal suture. Fisher[14], with a great experience In cataract operations, concludes that these two procedures are all important in the prevention of iris prolapse.

After a limited experience, I am gradually forced to the conclusion that, in phacoerisis at least, an iridectomy is unnecessary.

This presupposes, of course, that the operation has been carried out carefully and with every attention to detail in the matter of dislocating and tumbling the lens. Having come to this conclusion, against sound opposition, I departed from the technique laid down, and omitted the iridectomy in my later cases. Hoping that the narrow ring of iris of a dilated pupil would afford little obstruction to the escaping aqueous, and would not tend therefore to balloon upwards into the wound, I instilled atropin after the operation. This was done to dilate the pupil, which at the end of the operation was found to have contracted. The pupil tends to contract considerably after the removal of the lens, remaining in a semi-dilated condition at the end of the operation. It was found, however, on the third day that the pupil was smaller than it had been on conclusion of the operation. It is Barraquer's custom at the conclusion of the operation to apply a little 0.5 per cent. eserin ointment by means of a glass rod, placing the ointment in the lower conjunctival fornix. This part of the technique had previously been followed and was again returned to, save that a 0.5 per cent. solution of eserin was used in place of the ointment. One argued that although the contracted pupil would present a greater surface to the escaping aqueous, yet on account of the miosis and the increased tone in the sphincter pupillae, the iris would not yield and be forced upwards into the wound by the escaping aqueous. A further argument in favour of miosis is the fact, demonstrated by Thomson Henderson, that a contracted pupil helps to open the crypts in the iris and so facilitates the escape of aqueous humour from the anterior chamber into the veins at the root of the iris. Even if eserin were not used the pupil would tend to contract, the reason for this being a physiological one, namely, that when the aqueous is allowed to escape, the iris becomes hyperaemic and the pupil consequently becomes contracted[15].

The Insertion and Application of the Erisiphac to the Lens.—The incision completed, it was noted that the corneal flap lay in such close apposition to the edge of the wound, that slight pressure above was necessary to coax the cup of the erisiphac between the lips of the wound. Very frequently in passing the suction cup through the incision, the edge of the cornea became inverted. To correct this, some movement of the erisiphac across the wound was necessary, sometimes the movement freeing the inturned edge of the cornea, but often without success, in which case the application of the cup had to be proceeded with, a clear view of the margin of the iris not being obtained on account of the irregular corneal surface, the result of the inversion of the lip of the wound. With a tinge of blood in the anterior chamber and an inverted corneal flap, phacoerisis became impossible unless one raised the corneal flap on the back of the erisiphac and looked directly at the upper

segment of the iris to make certain that no part of the iris became ensnared, while placing the suction cup on the lens. If a clear view is to be obtained through the cornea, then the even contour of the latter must not be disturbed; the slightest wrinkle or unevenness means a certain amount of blurring of the margin of the iris. It was found that the difficulty in coaxing the suction cup in between the lips of the wound, with its disturbing effects, could be obviated by simply using a flat iris repositor with which to raise the corneal flap. The flap raised, the erisiphac is gently slipped beneath the cornea, which is then allowed to rest on the back of the cup, no irregular bending or curving of the corneal surface occurring. A good view of the lower pupillary margin is thus obtained against the lens capsule, and the danger of ensnaring the iris is avoided. Barraquer[1] states that should the pupil contract, the application of the erisiphac is rendered difficult, yet with a little skilful manipulation the iris can be avoided by edging one part of the cup under the iris. Should iris get between the lens and the suction cup, a complication, which one at once recognizes as having occurred from the sense of resistance felt the moment any attempt is made to tumble the lens, then the passage of the vacuum should be interrupted, air allowed to enter the cup, the hold on the lens loosened, and a fresh hold taken.

Accurate apposition of the suction cup to the lens capsule is of course essential. The angle at which the suction cup is placed on the shaft of the erisiphac should be carefully studied; also the angle which the shaft will make with the plane of the cornea when the instrument has been applied. The operator should practise holding the erisiphac at the proper angle by approaching it to the corneal surface. It is surprising how much nearer to the perpendicular the proper angle lies than is at first imagined, if Müller's erisiphac is used. Accuracy can be acquired by placing the cup of the detached erisiphac on an anaesthetized cornea. The instrument is held exactly as one holds a von Graefe knife when making a corneal incision, lightly and gently. A long hold on the instrument, which one learns to take with practice, gives greater freedom of movement, and minimizes any danger which may arise from movement of the eye by the patient. The suction cup is placed on the lens, theoretically without the application of any pressure, the signal is given and the assistant gives passage to the vacuum pressure. It is important for various reasons that this be done rapidly and firmly. If the vacuum pressure is allowed to pass slowly, and the suction cup has not been applied accurately to the lens capsule, air will be drawn into the erisiphac. There is at this moment grave danger of the inrushing air dislocating the lens backwards into the vitreous chamber. The explanation of this is not difficult to appreciate when one remembers that a vacuum

pressure of well over half an atmosphere is being employed. When the erisiphac has not been applied properly, and passage is given to the vacuum, air at this pressure is drawn suddenly from the open anterior chamber into the suction cup through a space probably not much more than one millimetre wide, but large enough to prevent the inrushing air from drawing the lens up towards the suction cup. The edge of the suction cup being solid, and for the moment fixed, this sudden application of pressure to the lens surface, due to the stream of air rushing towards the suction cup, ruptures the delicate zonular fibres, and the lens, now free, is driven through the hyaloid membrane deep down into the vitreous. Any slight inaccuracy in the application of the suction cup is overcome if the passage to the vacuum pressure is given rapidly, the lens thus being drawn up towards the cup. Any gross inaccuracy, however, will undoubtedly result in the dislocation of the lens, if the latter is not actually driven by the force of the passing air deep down into the vitreous. Herein lies the most disconcerting complication which may occur. The air rushes into the suction cup and the lens disappears instantaneously into the depths of the vitreous. It is not the slow motion of the dislocated lens in the intracapsular operation, sinking slowly from view, or frequently remaining in the pupil, allowing of its removal with the spoon. The lens simply flashes out of sight and is lost. For this reason, silence in the operating theatre is essential; no hissing of steam from sterilizers, no noisy primus stoves, or running taps can be allowed. The careful and wary operator will be all attention, listening for the slightest sound, while passage is given to the vacuum, and will continue in that alert state of hearing until the lens has been removed from the eyeball, the slightest or faintest hiss of passing air being the signal for instantly shutting off the vacuum pressure, and thus avoiding dislocating the lens with resulting loss of vitreous. If the operator does not feel sufficiently confident in his ability to re-apply the erisiphac, he ought then, if the lens is still in the pupil, to finish the operation by Smith's method. Another point in favour of giving rapid passage to the vacuum is that with light traction the zonular fibres break at their ciliary attachment, while if the pressure is applied with greater force, and more rapidly, the zonular fibres break nearer the lens periphery.

Barraquer[1] points out that with slow stretching the ciliary region becomes traumatized, and he noted on examination with the corneal microscope that remains of the zonular fibres became incarcerated in the lips of the wound, and these, with incarceration of the angles of the coloboma, gave rise to irido-cyclitis, which disturbed the post-operative course of the case.

Once the lens has been grasped by the erisiphac, then, if the

hold is long and light, it matters little whether the patient moves his eye about or not, the erisiphac will merely follow the eye in its movements and do no damage, so long as no effort is made to check the eye movements by means of the erisiphac. The erisiphac should be so held that it can be turned through an angle of 180 degrees, the greater part of the movement being carried out from the wrist, any rolling motion between the fingers being minimal and kept as a sort of reserve for the completion of the turn should the wrist movement be found insufficient.

The Movements to Tumble and Remove the Lens.—It is in the performance of these movements, the initial stages of which play an important part in the success or failure of the operation, that, for inexplicable reasons apparently, failure generally occurs.

The tumbling movement may be well advanced when the erisiphac slips, air enters, and the vacuum pressure is lost. Again, the lens may have been successfully tumbled, but when engaging the incision, the lens seems to drag behind and finally slips from the suction cup, and the beginner, not without reason perhaps, loses confidence in an instrument the use of which is fraught with so many complications.

Wherein lies the error in technique? The error lies first in the initial movement, and then, having tumbled the lens, in erroneously pressing it against the posterior surface of the cornea, hoping that by doing so the lens will be kept in contact with the suction cup and not be allowed to slip. The rationale of the tumbling movement becomes clear when the physical conditions existing in the eye are considered.

To simplify matters let us first consider how the lens would react to certain forces applied to it, were it a solid body. The posterior convex surface of the lens is in perfect juxtaposition with the anterior surface of the vitreous, lying in the patellar or hyaloid fossa. Any force tending to pull the lens directly upwards, in the direction *X* in Fig. 4, would be strongly resisted on account of the cohesion existing between two perfectly smooth surfaces. Any force in the direction *Y* would produce no movement of the lens, and would, if excessive, result in the rupture of the lens capsule or of the hyaloid membrane, or of both, with vitreous loss. To cause the solid body L to tumble, that is to cause it to revolve in the hyaloid fossa without any tendency to remove it from the fossa or to apply pressure through it on the fossa, force must be applied at *Y* in a downward direction and at *X* in an upward direction, Fig. 5. Forces so applied will cause the solid body L to take up the positions seen in Figs. 6 and 7. The forces, continuing to act perpendicularly to the plane of this solid body L will pass through a horizontal position and finally, when the tumbling has been

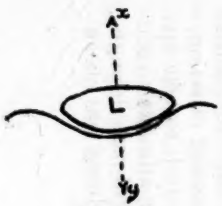


Fig. 4

Fig. 5

Fig. 6.

Fig. 7.

Fig 8

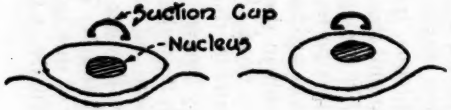


Fig. 9.

Fig. 10.

Fig. 11.

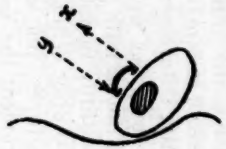


Fig. 12.

Fig. 13.

Fig. 14

Fig 15

Fig. 16

Fig 17

Fig 18

completed, become inverted, *Y* acting upwards and *X* downwards, Fig. 8.

Now imagine a flat circular suction cup on a handle applied over the centre of the anterior surface of such a solid body L, which measures 10 mm. in its transverse or horizontal diameter, and 5 mm. in its antero-posterior diameter. The distance from the centre of the suction cup then, to any point on the periphery of this solid lens would measure 5 mm., and from the centre of the cup to any point along the posterior surface of this solid lens would measure roughly 5 mm. Now, to cause such a solid body to tumble, all that would be necessary to bring the forces *X* and *Y* into action, would be to roll the handle of the suction cup between the fingers, remembering that the centre of rotation is the centre of the cup and therefore must not move if surrounding structures are not to be damaged. It is probably an attempt to perform some such movement as this that is the cause of many inexplicable failures.

Now consider the changes which occur in the normal lens when the vacuum pressure passes along the erisiphac to the suction cup. The lens diminishes in size in its transverse diameter, which tends to, and should rupture the zonular fibres, if the vacuum pressure has been applied instantaneously and is of the correct force. The nucleus of the lens also is drawn upwards towards the suction cup, see Figs. 9 and 10. It is most important to recognize this latter point. Remembering that the lens is not a solid body throughout, that its tranverse diameter is 9 to 10 mm., while that of the suction cup is 5 mm., it is readily seen that the application of the forces in the directions *X* and *Y* fails in practice. Were the lens solid, the theory would apply and the forces would be represented as acting through diametrically opposed points on the periphery of the suction cup, and a mere rolling of the erisiphac between the fingers would suffice to tumble the lens. The lens, however, is not solid, but consists of a solid nucleus lying in a fluid medium; the forces *X* and *Y*, therefore, acting through diametrically opposed points on the suction cup, act, not on the lens itself, but on the nucleus, now lying in close apposition to the suction cup. Any attempt to tumble the lens in such a manner will result in:

1. The suction cup being pulled off the lens capsule, the lower periphery of the lens impinging on the posterior surface of the cornea.
2. Bursting of the lens capsule, or
3. Pulling the lens out of the hyaloid fossa, with rupture of the hyaloid membrane and consequent vitreous escape.

All are serious complications, to avoid which every endeavour must be made.

Having grasped the facts so far stated, one can now consider the movements which are necessary to tumble a lens, which is not solid, but consists of a solid nucleus in a more or less liquid medium. The suction cup having control of the lens, really through the medium of its solid part, the nucleus, the first movement is to pass the cup upwards towards the upper pupillary margin, putting no downward pressure on the lens, the latter taking up a position such as is shown in Fig. 11. If the pupil is not fully dilated this movement in the plane of the iris will bring the edge of the suction cup under the iris. This slight movement, about 1 mm. or less in extent, depending on the fluidity of the lens, brings the nucleus of the lens over the point where the pressure must be applied to cause the lens to rotate in the hyaloid fossa. The second movement is a downward motion in the direction *Y*, Fig 11, one might almost say, at the risk of being misconstrued, a dipping down of the entire lens nucleus by means of the erisiphac into the hyaloid fossa, *i.e.*, in the direction of *Y*, Fig 11. At the same time the erisiphac is turned from the wrist so that a force *X* acts about the middle of the lens, transmitted through the lower periphery of the nucleus, and aiding, though slightly, the force *Y* in sweeping the lower periphery and posterior surface of the lens out of the hyaloid fossa. As the erisiphac is slowly and gently turned, the force *Y* gradually assumes a horizontal and finally an upward direction, the upper periphery of the lens, carried along on the cup, gliding into the hyaloid fossa, without any pressure on the hyaloid membrane. This causes the lower periphery of the lens to approach the posterior surface of the iris, obliterating the posterior chamber, without impinging in any way against the posterior surface of the cornea in the region of the sclero-corneal margin, Figs. 12 and 13. The lens thus tumbled, the third movement is a sweep upwards towards the upper conjunctival fornix. In no case should the lens be pressed against the posterior surface of the cornea, under the impression that by so doing any tendency for the lens to slip or be dragged off the suction cup as it engages the incision, can be prevented. There is ample room for both the lens and the cup between the hyaloid membrane and the cornea, and the aim should be to glide the posterior surface of the lens out of the hyaloid fossa, till the posterior surface of the lens comes to lie against the posterior surface of the cornea without any more pressure of the lens against the cornea than is caused by the weight of the corneal flap.

In every stage of the delivery of the lens, from the first to the last, the first essential is to proceed slowly, deliberately, gently, holding the erisiphac lightly, and thus avoiding any jerking motions, which may be imparted to it by sudden movements of the eye by the patient. The erisiphac will not leave the lens so long as no attempt is made to steady an unruly eye with it.

There is a great tendency to hurry the final movement; this should be avoided. There is nothing to be gained by speed and the complications which one does not want to see may occur at the very end of what, with less speed, would have been a successful operation. These complications are; rupture of the hyaloid membrane with vitreous loss; burst capsule due to the lens impinging against the edge of the wound and the capsule being cut; iris prolapse due to the iris following the lens in much the same way as a curtain will follow a closing door.

The Toilet of the Wound

After a properly performed Barraquer operation, toilet of the wound does not enter into the technique. Upon removal of the lens, the conjunctival suture is tied, if such has been used, the eye is gently closed and a pad, smeared with a little ungt. hydrarg. oxidi flavi 0.5 per cent., or simple sterile vaseline is applied to the lids. This is covered with a small piece of wool and the eye bandaged. Before the assistant closes the upper lid, and the assistant, *not the patient himself*, should close the lid, the operator satisfies himself that the pupil is circular, clear and black.

There should be no question of replacing the iris. That this should be so becomes evident when one watches carefully what happens to the upper half of the iris during a properly performed Barraquer operation. The upper pupillary margin of the iris tends to adhere to and follow the lens as it tumbles, and in this way is spread out flat on the hyaloid membrane, to which it will adhere unless pulled off by rough and speedy delivery, Figs. 14—18. The re-forming aqueous floats the iris free from hyaloid membrane. I have seen the iris adherent to the hyaloid membrane at the first dressing, but in every case it floats free. To lay the upper segment of the iris flat on the hyaloid membrane it is necessary to tumble the lens fully, otherwise the edge may adhere to the lens and become stripped off with it during delivery. That there should be no need to replace the iris, marks a very important advance in the technique of intracapsular operations for the removal of the cataractous lens, for, as an experienced operator says: "The toilet of the iris is of the utmost importance, chiefly because of the large coloboma and adhesions of the iris to the upper sclero-corneal margin"[16]. If the iris has become ensnared in the suction cup and has been pulled out of the wound, air is allowed to enter the cup and the erisiphac freed from the lens, which is lifted off the iris. The latter is then replaced, or, if torn, the torn part is excised and the edges carefully replaced. Such an accident of course cannot happen if the pupil has been properly dilated and the suction cup accurately applied to the lens, care being taken that the iris margin has not been ensnared.

The Dislocated or Couched Lens

Should a lens be couched during the operation a complete iridectomy should be made, atropin 1 per cent. instilled and the eye bandaged for five or six days. Normally a dislocated lens, after Smith's operation, floats into the pupil on the third day, but after a Barraquer operation it is seldom seen before the sixth day. The object in completing the iridectomy, is to allow of the lens being removed easily with the spoon when it appears in the pupil, an iridectomy and a dilated pupil facilitating the delivery with the spoon. In using the spoon the latter must be passed behind the lens with the least possible impact on its periphery, any impact on the lens causing it immediately to disappear from view, when the eye will have to be bandaged again for a further period of five or six days. This sudden disappearing of the dislocated lens is probably due to the fact that there has been considerable vitreous loss, with resulting excess in secretion of aqueous humour and lowering of the specific gravity of the intraocular fluids.

Post-Operative Treatment

Both eyes, if operated upon are bandaged for six days, at the end of which period the first dressing is done, and the eyes again bandaged for a further period of two days. On the eighth day, if no post-operative complications have occurred, a shade is given, and two days later the patient is discharged. If one eye only has been operated upon, then at the first dressing the sound eye is left unbandaged.

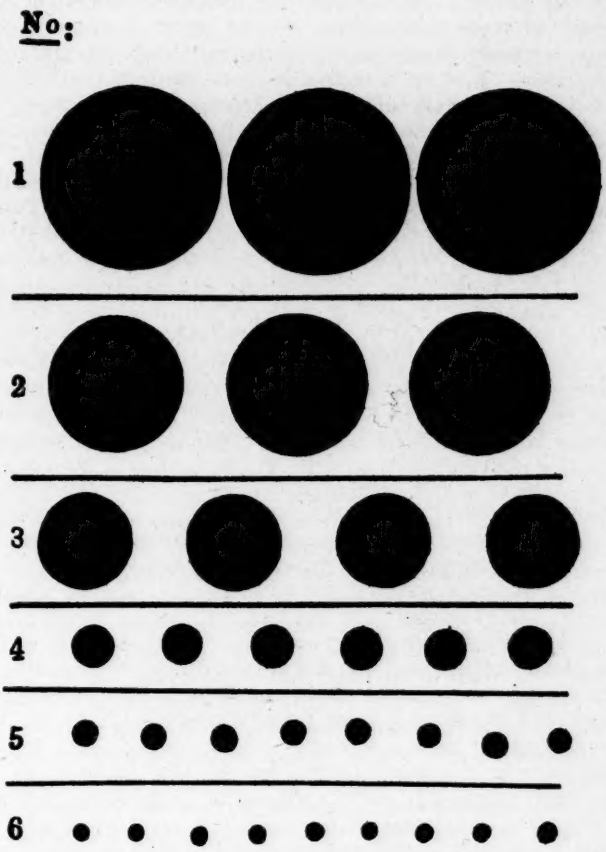
On the eighth day eyes are carefully examined and vision taken. Sometimes the patient, content with the results, takes his leave after the first dressing has been done. On the tenth day, if the patient is still in hospital, the eye is again examined with the corneal loupe, vision again taken, and the patient discharged.

Standard of Visual Results

Amongst an ignorant and illiterate people to dogmatize about visual results is not possible. The difficulty in assessing visual results in the cases seen at Shikarpur can only be fully appreciated when it is remembered that six or seven different languages are spoken, and that at the height of the season there are from 500 to 600 cataract cases in the wards. These wards are temporarily erected shelters consisting of pieces of matting laid across branches of trees, supported on hastily built brick columns.

The simplest of tests must be employed, otherwise the object aimed at is defeated, and the man who can count fingers at six yards stoutly affirms that he cannot count anything on the test dot card at six feet. The first test then is merely counting fingers at six to eight feet, and it is found that the patient, who can count

fingers readily and differentiate the thumb from the fingers at this distance, has reasonably good vision, varying with glasses, when this has been tried, from 6/12 to 6/6, depending to a great extent on the intelligence of the patient. When vision is described as



very good (v.g.), it means that this test has been conformed to. If very good plus (v.g.+) is noted against the visual result, it means that the patient possessed remarkable visual acuity when tested, giving ready and correct answers in counting fingers or dots at greater distances than eight feet. When vision is noted as v=h.m., it means that the patient could see hand movements from three to five feet. Vision=g, denotes counting fingers from three to four feet.

To demonstrate the difficulty which confronts the operator in India who would endeavour to obtain end results with regard to vision, post cards were printed, dots on one side ranging from 6/60 to 6/4, and on the reverse full instructions in Urdu as to the purpose of the card and the method of its use. These cards were stamped, addressed and given to the more intelligent of the patients, who were asked to fill up the card and return it in three months' time. It is not a matter of much surprise that up to date not a single post card has been returned, even from those intelligent patients, who could talk English and Urdu fluently, and to whom the purpose of the card could be fully explained.

The Indian is utilitarian in his ideas; he cannot see what benefit can accrue to himself from filling up a card, and if he is satisfied with the result, after counting the dots, he will probably throw the card away; if not satisfied he will worry the unfortunate operator or someone else, to know why his vision is not what he hoped it would be. That this difficulty with regard to visual end results is not confined to Sind, but is the rule in India, is brought out in an article by Major F. F. Strother Smith, I.M.S.[16], who attacked the problem in still another way. He says: "Letters written to the homes of hospital patients I found were useless, either the letter was not delivered, or, if delivered, was looked upon as a police ruse to entice him to Allahabad for some mysterious reason or other, or else the patient objected to spending the money on his journey." He adds further: "Anyone who has ever tried to fit a number of the latter patients (ignorant villagers) with glasses will realize the difficulty of getting an accurate estimate of the amount of vision they possess. It is difficult enough to estimate his refraction by retinoscopy, but when the actual lenses estimated are put before his eyes and he is asked to count Snellen's dots he will refuse to count in the hope that by so doing you will give him better glasses." One can readily understand how impossible it is, with the class of patient with whom this report deals, to obtain accurate end results four to twelve months after the operation. Amongst the more intelligent and educated classes of patient, end results may be obtained, and work in this way is being done[16]. But it must be remembered that in India patients travel hundreds of miles by road and rail for treatment, and it is expecting much to hope that a post card or letter will persuade that patient to repeat the journey, merely to satisfy the keen surgeon who is striving to collect visual end results. The ophthalmic surgeon in Europe and America should realize how relatively easy it is for him to obtain end results, and that if his colleague in India does not produce these, it is not from want of earnest endeavour on the part of many to obtain them. The standard of success demanded by the patient will be an acuity of vision which allows him to perform his work

efficiently, and this will be a slightly variable one, since much will depend upon the nature of the work[17]. The majority, probably 95 per cent., of the patients seen, are illiterate. If such patients can see sufficiently well to do their daily work, which is mostly of a primitive agricultural type, or see the faces of their grandchildren, whom up to the date of operation they have not been able to see, little more is to be gained by the use of glasses.

Details of Post-Operative Results

The 115 cases, the post-operative results of which I propose to detail, form my first series of cataract extractions performed by the Barraquer method.

I started *de novo*, having received no instruction in the technique to be followed. My results may encourage others to persist in their efforts to master the difficulties in technique, and to become reasonably expert in what is, I believe, undoubtedly the only operation at present practised, which can claim to extract the lens without traumatism to intraocular structures.

Fifteen cases were failures, in the sense that the operation had to be completed by some other method, but an analysis of the results of these failures will show that, with care and judgment, a failure with the erisiphac does not necessarily mean a lost eye. These failures are naturally grouped amongst the first 25 per cent. of cases. If the beginner can only persuade himself that, once the suction cup has slipped, to continue with the erisiphac is to court disaster, and does not therefore persist in trying again because the lens lies so temptingly in good position in the anterior chamber, then lost lenses will not appear in his list of complications. Barraquer definitely states that the only contraindication in phacoerisis is a dislocated lens. With Colonel Smith, he believes that lenses can be removed in all stages of immaturity. Success can only come by practice and by the careful study of those movements in the carrying out of which one tends to fail. One is not blind to the fact that to some the operation will present difficulties hard to master, while to others, with practice, it is merely a piece of surgical technique no more difficult to carry out than the intracapsular operation. To persist in an operation which gives less favourable results than are to be obtained by old and tried methods would be unwise; to condemn without honest endeavour to master the technique is foolish, because the operation has proved itself a brilliant success in Barraquer's hands.

Reviewing 249 cases of cataract extraction with capsulotomy, done by Professor Meller during 1919 to 1921, Dr. Hans Barkan [18] states: "The method that gives the great majority of patients 20/20 to 20/40 and a small minority poorer vision than this, will remain

the method till something better than Smith or Barraquer arrives," and he concludes that "intracapsular procedures must stand the test of comparison with the combined extraction performed on patients selected with equal care." He then submits a list of those conditions, the presence of which in the patient, according to Professor Meller, renders the case one of complicated cataract. To consider such a list in the case of the patients seen at Shikarpur, would result in the great majority of the cases being classed as complicated cataracts. The critic must remember that the cases, which form the subject of this report, were not selected with that care which is exercised in European clinics, but were submitted to operation as soon as they reached hospital, being sent direct from the out-patient department to the operating theatre, without preparation of any description. The last 15 or 16 cases which were done towards the end of the season, might be said to have been prepared in that they were detained one night before operation, and had silver nitrate one per cent. and atropin one per cent. instilled on the evening of admission. The Indian does not understand why he should require any preparation for operation, and if he is not operated upon on the day of his arrival he begins to fret. If the following morning does not see his case dealt with, he fancies that the surgeon has little interest in him, and off he goes to a hospital where he will be dealt with on arrival. In spite of these adverse conditions, I consider that the results obtained compare very favourably with the results obtained by other methods, under the same or better conditions.

Analysis of Cases in which Phacoerisis failed, the Operation being finished by some other Method.

The number in brackets is the patient's number in the hospital cataract book. It serves to identify the patient, and is useful for purposes of reference when the same patient figures in more than one list.

1. (265)—The suction cup slipped after tumbling; removed by Smith's method; no complications; pupil clear, circular, black. V=v.g.
2. (267)—The suction cup slipped after tumbling; removed by Smith's method; iris prolapse; pupil circular and clear; clouding of the cornea due to perchloride of mercury. V=g.
3. (274)—The suction cup slipped while the lens was engaging the wound; removed by Smith's method, the capsule bursting, but being removed entire with the capsulotomy forceps; pupil circular; a slight amount of cortex left behind. V=g.
4. (317)—The suction cup was inaccurately applied, air rushing in dislocating the lens into the vitreous chamber. In this case the lens never again appeared in the pupil, the patient being detained for two weeks. This was a beautiful eye with a circular, clear, black pupil and with remarkably acute vision. V=v.g.+.
5. (319)—The suction cup slipped; lens removed by Smith's method; no complications; pupil clear, circular and black. V=v.g.
6. (321)—The suction cup slipped; lens removed by Smith's method; no complications; pupil circular, clear, black. V=v.g.
7. (410)—The suction cup slipped; lens removed by Smith's method; no complications; pupil circular, clear, black, a small piece of iris remained caught up in the wound. V=v.g.
8. (416)—The suction cup slipped; lens removed by Smith's method; no complications; pupil circular, clear, black. V=v.g.

9. (456)—The suction cup was inaccurately applied, air rushing in dislocating the lens into the vitreous chamber; the lens was removed with the spoon on the sixth day. The patient went off two days later, no visual result being obtained.

10. (611)—The suction cup slipped; lens removed by Smith's method; no complications; pupil circular, clear, black. V=v.g.

11. (612)—The suction cup slipped; lens removed by Smith's method; no complications. V=v.g.

12. (702)—The suction cup slipped; lens removed by Smith's method, the capsule bursting but all of it being removed with the capsulotomy forceps. A case of strabismus. V=doubtful hand movements.

13. (703)—The suction cup slipped; lens removed by Smith's method; no complications; some haziness of the cornea due to perchloride of mercury. V=g.

14. (1393)—Iris ensnared in the suction cup. The erisiphac was gently freed from the lens and the lens removed by Smith's method, a small piece of iris remained caught up in the wound. V=v.g.

15. (11)—A case of traumatic cataract in a young man. Numerous posterior synechiae were broken down in tumbling the lens, but in breaking these adhesions the suction cup slipped. The lens was removed by Smith's method; no complication. The pressure used in this case was 41 cms. Hg. It was felt that had a vacuum pressure of greater intensity been employed the lens could have been removed with the erisiphac. The result was very good, the pupil being circular and clear, but corneal nebulae interfered with vision. V=g.

Analysis of the above 15 Cases.

No complications	=8.	V=v g. in all cases.
Iris in the wound	=2.	V=v.g. in both.
Burst capsules	=2.	V=g. in one. V=h.m. in the other, a squinting eye.
Iris prolapse	=1.	V=g. due to mercurial clouding of the cornea.
Couched—recovered	=1.	V not obtained, patient leaving hospital.
Couched—not recovered	=1.	V=v.g. +

In two cases therefore, was vision not improved; one in a squinting eye, the other in the case of the couched lens recovered with the spoon, in the latter case the visual result was not obtained, the patient leaving hospital before vision was taken.

Detailed Analysis of Unsuccessful Barraquer Operations—8 Cases.

1. (413)—Burst capsule, all removed with the capsulotomy forceps. Iris prolapse with subsequent irido-cyclitis due to incarceration of the iris. Keratitis with considerable pannus formation. V=h.m.

2. (414)—Keratitis with pannus formation which interfered with vision. V=h.m.

3. (644)—Developed plastic irido-cyclitis. Patient had a dirty conjunctival sac, and was suffering from pyorrhoea. V=h.m.

4. (676) 5. (677). A case of double cataract. Both beautiful eyes with clear, circular, black pupils. The right eye showed a fine ring of pigment deposit, only seen while the pupil was semi-dilated and after careful examination with the loupe. Fundus examination revealed double optic atrophy. V=no perception of light.

6. (753)—A beautiful eye; pupil circular. clear and black. Had a slight central corneal leucoma. Tension=38 mm. Hg. Tension of the other eye (R) was 100 mm. Hg. A case of incipient glaucoma. V=h.m.

7. (8) 8. (9)—A case of double cataract, in a Mohammedan woman, who gave her age as 100 years. Her son who brought her gave his age as about 60 years, so the patient's age was put at 85 years. No complications occurred during or after the operation, both eyes, on conclusion of the operation, showing circular, clear, black pupils. The anterior chamber, however, did not re-form, little or no aqueous being secreted in the left eye and a very little in the right eye. The wounds healed normally, pupils remaining circular, but the cornea being collapsed, more markedly so in the left, where there was no attempt at secretion on the part of the ciliary processes. V=h.m.

An analysis of these unsuccessful cases shows that Nos. 4, 5, 6, 7, and 8 owe their failure to complications unconnected with the operation.

Nos. 4 and 5. Double optic atrophy.

No. 6. Incipient glaucoma with corneal leucoma.

Nos. 7 and 8. Senility, with defect in the secretory power of the ciliary processes.

In No. 1. The failure is directly due to the operation, the iris being incarcerated in the wound. In this case only did a complication occur on the table, namely, a burst capsule.

In Nos. 2 and 3. The failure is indirectly due to the operation, the latter probably lighting up latent septic foci.

Complications in all Cases of Completed Barraquer Operations.

A.—Complications arising on the Table.

1. *Burst Capsules*=6 per cent.

1. (323)—All the capsule removed; pupil circular, clear, black. V=v.g.
2. (413)—All the capsule removed; complicated further by iris prolapse and pannus formation, developing later a plastic iritis. Already classed amongst the unsuccessful cases. V=h.m.
3. (464)—All the capsule removed; some cortex left behind; pupil finally clear and circular. V=v.g.
4. (647)—All the capsule removed; pupil circular and clear. V=v.g.
5. (648)—V=v.g. Ditto.
6. (675)—V=v.g. Ditto.

2. *Vitreous Loss*=3 per cent.

1. (411)—Slight loss due primarily to a small incision; pupil circular and clear. V=v.g.
2. (1322)—A bad patient; squeezed out a small amount of vitreous after the operation had been completed; pupil circular and clear. V=v.g.+.
3. (1415)—A bad patient; squeezed out a small amount of vitreous after the operation had been completed; pupil circular and clear. V=v.g.

In no case did vitreous appear before the lens had been removed, and usually such loss occurred after the completion of the operation, due to some indiscretion on the part of the patient, such as squeezing of the lids. To this cause two of the vitreous losses are due, the third being the result of faulty technique, a small incision.

3. *Burst Capsules associated with Vitreous Loss*=1 per cent.

1. (1339)—In this case much flocculent cortex was left behind, no attempt being made to remove it on account of vitreous loss, the vitreous following the removal of the capsule. On the tenth day a linear extraction was done and the greater part of the cortex removed, a slight amount being left at the upper margin of the pupil. V=g.+.

The grave nature of this double complication has previously been referred to[19].

4. *Ensnaring of the Iris by the Suction Cup*=2 per cent.

1. (693)—A small piece of iris was caught up in the suction cup and slightly torn during the tumbling of the lens. A trace of blood was left in the anterior chamber, which cleared up. V=v.g.
2. (14)—In this case the ensnared piece of iris was badly prolapsed, the prolapse being cut off and the edges replaced. Considerable haemorrhage occurred into the posterior chamber, which cleared up, but tags of iris in the pupil interfered with vision. V=g.

B.—Complications present at or after the first dressing.

1. *Iris Prolapse*=3 per cent.

1.(413)—Peripheral iridectomy was performed. Already referred to under burst capsule and classed amongst the unsuccessful cases.

2. (642)—Peripheral iridectomy was performed. The iris prolapse was cut off and a conjunctival flap made covering the upper corneal limbus. V=g.

3. (1187)—Iris slightly torn, due to restlessness on the part of the patient, while the peripheral iridectomy was being made. The iris prolapse was very slight and required no treatment. V=v.g.

2. *Iritis*=3 per cent.

1. (413)—Already referred to and classed amongst the unsuccessful cases.
2. (644)—Already referred to and classed amongst the unsuccessful cases. This case developed a plastic iritis. Conjunctival sac was very dirty and the patient was suffering from pyorrhoea in addition.
3. (1335)—This case developed a serious iritis, which cleared up leaving a thin band at the upper periphery of the pupil. V=g.

3. *Keratitis*=1 per cent.

1. (414)—Already referred to and classed amongst the unsuccessful cases.

Hernia of the vitreous through the pupil, without rupture of the hyaloid membrane was noted in one case only, and that after very careful examination of the eye with the corneal loupe. The vision in this case was very acute. Barraquer refers to this doubtful complication, as occurring very occasionally, some days or weeks after operation, in patients, who have been obstreperous on the table, who suffer from cough or who are inclined to vomit(1).

Summary of Results

1.	Successful cases, without complications . . .	V=v.g. = 78
2.	Successful cases, with complications . . .	V=v.g. = 10
	,, ,, ,, ,, . . .	V=g. = 4
3.	Unsuccessful cases, ,, due to operation .	V=h.m.= 3
		or
	,, ,, ,, ,, not due to operation .	V= less = 5
		Total=100

Complications, due to the operation, occurred in 17 cases. These complications might be arranged, as below, according to their effect on the visual result.

1. Not interfering with vision. V=v.g. or more.
2. Interfering partially with vision. V=g. or more.
3. Interfering grossly with vision. V=h.m. or less. Classed as failures.

Complications.	*V=v.g. or v.g.+*	*V=g. or g.+*	*V=h.m. or less.*
1. Burst capsules.	5. Nos. 323. 464. 647. 648. 675.	Nil.	1. No. 413.
2. Vitreous loss.	3. Nos. 411. 1322. 1415.	Nil.	Nil.
3. Vitreous loss associated with burst capsule	Nil.	1. No. 1339.	Nil.
4. Ensnared iris.	1. No. 693.	1. No. 14.	Nil.
5. Iris prolapse.	1. No. 1187.	1. No. 642.	1. No. 413.
6. Iritis.	Nil.	1. No. 1335.	2. No. 413. 644.
7. Keratitis.	Nil.	Nil.	1. No. 414.

Causes of Non-Improvement in Vision

Irido-cyclitis: 413 and 644, following a burst capsule with iris prolapse.

Keratitis: 414, with pannus formation.

Optic atrophy: 676 and 677.

Corneal leucoma: 753, with incipient glaucoma.

Failure in secretion of aqueous humour: 8 and 9.

Reviewing results in those cases in which complications have occurred, it is evident that the intra-ocular structure, injury to which is the most prevalent cause of defective vision, is the iris. Any injury to the iris must be regarded as serious. The slightest damage to this structure may give rise to a series of the gravest complications. A torn iris, a tag incarcerated in the wound, a prolapse preventing healing of the wound, may set up a simple iritis, yielding to treatment but always liable to recur on exposure to cold, or should the patient become run down in health. It may be nothing more than a simple recurrence of pain in the eye, with lacrymation, but sufficient to cause intense discomfort to the patient. Or, more serious still, the incarcerated tag of iris, forming a suitable pathway by which organisms may enter the eye, iridocyclitis is set up, followed, it may be, by occlusion of the pupil and resulting loss of vision. Or again, a more virulent infection results in the eye being lost on account of sepsis. It is little wonder then that Fisher refers to iris prolapse as "the bugbear of all cataract operations."

Amongst the class of patient dealt with also, pyorrhoea alveolaris is the rule, and cannot be dealt with as one might wish previous to operation. It is remarkable that the percentage of post-operative complications arising from the septic condition of the teeth and gums met with amongst these patients is so small. Inflammation of the substantia propria of the cornea occurs as a result, and inflammation in the interior of the eye due to diffusion of toxins through Descemet's membrane. In non-suppurative iridocyclitis, such as is associated with some septic trouble, *e.g.*, pyorrhoea alveolaris, the toxin in the aqueous diffuses through Descemet's membrane, and then sets up an inflammation in the deeper layers of the cornea [10].

Complications may be due to a bad patient or to faulty technique. The patient may be unruly on the table, he may squeeze his lids under the bandage—a cause of iris prolapse—or he may actually remove his bandage, and with dirty fingers retract the lids to allow his relatives to report on the condition obtaining, and incidentally test his vision. Faulty technique will give rise to many complications, most of which can be avoided by going through the various stages of the operation slowly and carefully.

The worst complication one can have is iris prolapse, and this because it requires a second operation for its efficient treatment. What are the factors which lead to iris prolapse, and what can be done to prevent it? If those faults in technique which tend to cause iris prolapse and possibly other complications also, could be regarded as arising from one prime fundamental error, and could this major fault be designated by one word, then that word would be *speed*. If prolapse of the iris is to be prevented then, the

incision must be made slowly, if possible in one sweep, the blade of the knife being kept in the plane of the iris all the time, so that there will be no tendency for the wound to gape and allow the aqueous to escape too freely. If the bulk of the aqueous has been lost before the section has been completed, then the iris will float in front of the blade and have to be cut or its free margin will curl up over the back of the blade, and follow the blade in between the lips of the incision as it cuts out. Further, the lens ought to be tumbled, as previously mentioned, and the final stages of the delivery carried out slowly and gently, so that the iris may not be disturbed from its position on the hyaloid membrane.

Does the peripheral iridectomy of Hess play any part in the prevention of iris prolapse? That it does so is undoubted, but that its rôle is of primary importance I doubt. If more attention were paid to the first points mentioned, with regard to the incision and the tumbling of the lens, and a conjunctival or corneal suture used, then the iridectomy would come to be regarded as a mere prophylactic against iris prolapse, and not as an essential part of the operation. In my last twelve cases I made no iridectomy at all, using a conjunctival stitch in five of these. In no case did iris prolapse occur, and in all the pupil remained circular. The three cases of iris prolapse reported were in patients operated upon during the height of the season, when pressure of work made speed essential. In all a peripheral iridectomy was done, save as above mentioned in the last twelve cases.

Occasionally it is noted on the first dressing that the pupil is not quite circular, being placed somewhat above its normal central position, and perhaps oval-shaped transversely. This slight irregularity in the shape of the pupil corrects itself usually before the tenth day. In every case, however, the whole of the pupillary margin of the iris remains visible, there being no question of the iris being drawn into the wound.

Success in phacoerisis may be said to be due to:

1. The simple extraction with or without iridectomy, every movement being carried out with care and without undue haste.

2. The use of the conjunctival or corneal suture.

3. The use of a subcutaneous injection of novocain 1:100, with cocain 1:150, in the region of the external angular process, to cause temporary paralysis of the orbicularis oculi [20]. This procedure is of great value in patients who seem likely to squeeze their lids.

4. The use of the subconjunctival injection of cocain four per cent. with adrenalin 1:1000 equal parts at the lower corneal limbus.

5. The use of a subcutaneous injection of morphia gr. ¼, one hour before operation. This injection is most useful because of the placid frame of mind into which it brings the patient at the time of

operation. It also tends to check any inclination there may be to vomiting, which very occasionally occurs after the injection of cocain and adrenalin.

The absence of reactionary symptoms is due to the simplicity of the surgical technique and to the absence of crystalline remains in the anterior chamber, which shortens convalescence and assures visual acuity [1], [5]. One must admit that there is an element of danger in the Barraquer operation, and that entirely new difficulties have to be mastered. But what new operative procedure worth trying has been free from difficulties or risk? In my opinion, to anyone familiar with the intracapsular operation, there is, after a certain amount of practice, less risk involved in removing a lens by the Barraquer method than by Smith's method. I can see difficulties but no disadvantages in the method, unless extra time spent over the preparation of the patient, more attention and time given to the various details in technique during the operation, an extra piece of apparatus to go wrong, which it never need do with ordinary care, can be brought forward as disadvantages, and these may be legitimately brought forward in a clinic where 1000 cataract extractions are performed in the course of a month. Even there, however, the advantages to the patient outweigh the disadvantages. The most immature cataract can be removed with the erisiphac just as easily as the mature. I have removed two lenses by the Barraquer method with excellent results in patients, who could with some difficulty read newspaper type, but whose distant vision was distorted. One feels diffident, however, in extracting a lens which one can not or only with great difficulty see with a good electric light.

"Many years have been necessary for establishing the rules which have led us to the precision obtained in the operative process by discission. The same must happen to the process of total extraction by the erisiphac or any other like method. It is necessary for us all to tackle this study without hesitation, lending to the experiments the sincerity which ought to be insisted upon in all scientific investigation" [6].

REFERENCES

1 **Barraquer, I.**, cited **Fisher, W. A.**—"Senile Cataract." Chicago, Ill., U.S.A., 1923.
2. **Wright, J. W.**, cited **Fisher, W. A.**—"Senile Cataract." Chicago, Ill., U.S.A., 1923.
3. **Hulen, Vard.**—*Jl. Amer. Med. Assoc.*, Vol. LVI, p. 154, 1911.
4. **Barraquer.**—*La Medicina Iber*, Madrid, August, 1919. *Amer. Jl. of Ophthal.*, Vol. III, No. 9, p. 721, abs. 1920. *Brit. Jl. of Ophthal.*, Vol. V, p. 24., abs. 1921.
5. **de St. Martin, M.**—*Ann. d'Ocul.*, July, 1922,
6. **Gallemaerts, E.**—*Ann. d'Ocul.*, Vol. CLIX, p. 481, 1922.
7. **Greeves, R. Affleck, Moore, R. Foster.**—Annual Congress of the Ophthalmological Society, cited *Lancet*, Vol. I, p. 897, 1923.
8 **Dickson, R. M.**—*Ind. Med. Gaz.*, Vol. LVIII, No. 12, p. 571, 1923.

9. **Wright, R. E.**—Reports of the Madras Eye Hospital, 1923.
10. **Collins and Mayou.**—"System of Ophthalmic Practice" (Pyle). Wm. Heinemann, London.
11. **Butler, T. Harrison.**—*Brit. Med. Jl.*, Vol. I, p. 945, 1924.
12. **Smith, H.**, cited **Fisher, W. A.**—"Senile Cataract." Chicago, Ill., U.S.A., 1923.
13. **Kalt, M.**—*Ann. d'Ocul.*, Vol. CXLIII, p. 436 1910.
14. **Fisher, W. A.**—"Senile Cataract." Chicago, Ill., U.S.A., 1923.
15. **Starling, E. H.**—"Principles of Human Physiology." J. & A. Churchill, London, 1920.
16. **Smith, F. F. Strother.**—*Ind. Med. Gaz.*, Vol. LVIII, No. 5, p. 208, 1923.
17. **Kirkpatrick, H.**—"Cataract and its Treatment." Oxford Medical Publications, 1921.
18. **Barkan, Hans.**—*Jl. Amer. Med. Assoc.*, Vol. LXXXI, No. 25, p. 2086, 1923.
19. **Cruickshank, M. M.**—*Ind. Med. Gaz.*, Vol. LVIII, No. 10, p. 461, 1923.
20. **Villard, H.**—*Bull. Soc. franç d'Ophtal.*, 1919. *Brit. Jl. of Ophthal.*, Vol. IV, p. 521, abs. 1920.

EDWARD THE CONFESSOR'S PHYSICIAN: AN OPHTHALMIC NOTE

BY

R. R. JAMES

LONDON

LEOFSTAN, Abbot of Bury St. Edmund's, died in August, 1065, and was succeeded by Baldwin, a monk of St. Denis at Paris, who was at that time Prior of Deerhurst, Gloucestershire. He was "gretly expert in crafft off medycyne"; and in most of the annals of the monastery he is called "medicus Aedwardi regis." He restored the sight of his hostile neighbour, Herfastus, Bishop of Hulm (later Thetford and afterwards Norwich) when the latter received an injury to his eyes.

Herman, the Archdeacon (Reg. Rub. Coll. Bur., 330, referred to by Yates in his history of Bury Abbey, p. 99), says that "as the Bishop was riding and conversing with his attendants on some injuries meditated by him against the monastery of St. Edmund, a branch of a tree struck his eyes, and a violent and painful suffusion of blood occasioned immediate blindness, St. Edmund thus avenging himself and punishing the temerity of the invader of his rights. Having long remained entirely blind, without the prospect of relief, the Archdeacon ventured to say to him: 'My Lord Bishop, your endeavours are useless, no collyrium will avail; you should seek the favour of God and St. Edmund. Hasten to Abbot Baldwin that his prayers to God and St. Edmund may provide an efficacious remedy.' This counsel, at first despised, was at length assented to. Herman undertook the embassy, and executed it on the same day, the festival of St. Simon and St. Jude. The Abbot benignantly granted the request; and the enfeebled Bishop came to the

monastery, being graciously received by the Abbot, and admonished by him to reflect, that as offences against God and St. Edmund were diminished, the medicine to be applied would more certainly alleviate his sufferings. They proceeded into the church, where, in the presence of the elder brethren, and certain peers of the realm, etc., the Bishop declares the cause of his misfortune; recites the injuries he had conceived against this holy place; confesses himself culpable; condemns under an anathema his advisers; and binds himself by a vow to reject such counsels. He then advances, with sighs and tears, to the foot of the altar; replaces (surrenders) on it the pastoral staff; prostrates himself before God and St. Edmund; performs his devotions, and receives absolution from the Abbot and brethren. Then having made trial of the Abbot's medicines, and as I saw by the application of cauteries and collyriums, assisted by the prayers of the brethren, in a short time he returned perfectly healed; only a small obscurity remaining in the pupil of one eye as a memorial of his audacity."

These facts are abstracted from a paper in the first volume of the Proceedings of the Bury and West Suffolk Archaeological Institute, by Samuel Tymms in 1848.

In the first of his historical essays in *Feudal England*, Round notices the case and dates it 1076-9. He is not concerned with the eye injury of the unfortunate Bishop but with one Thorold, the Norman Sheriff of Lincolnshire. The result of Baldwin's treatment was that Herfastus renounced his claim to jurisdiction over the Abbey.

Baldwin was a favourite of the Confessor, who granted him, for the monastery, the privilege of a mint; and the Conqueror continued to keep him in favour. During his abbacy the stately church of Bury was begun in stone; the previous structure had been only a wooden erection.

The *Monasticon* tells us something about the differences between Baldwin and Herfastus; it states that Baldwin went to Rome to get an injunction against Herfastus, "who having been elevated 1070 A.D. to the Bishoprick of Elmham, removed the see from that village to the town of Thetford, and in the following year declared his intention of finally establishing it at Bury."

It is idle to speculate on the cause of Herfastus's blindness, but I am inclined to think that he may have had cataract. Baldwin's collyriums may have caused his eyes to smart, and he, rubbing them, may have depressed his cataracts, completely in one eye and partially in the other. It is on these lines that Sir John Bland-Sutton accounts for Tobit's miraculous restoration of sight as recorded in the Apocrypha. In Tobit's case the irritant was the gall of a fish; anything would do so long as it smarted sufficiently. Herfastus died about 1085 and Abbot Baldwin in 1098.

ANNOTATIONS

The Lighting of Post Offices

A Committee has recently issued a valuable report on the lighting conditions and their effects on the work and health of the employees in post offices in the U.S.A. An abstract of this report is published in the *Illuminating Engineer* for April. It well illustrates, as the editor of that journal points out, the good effects attending the co-operation of the physicist and the ophthalmic surgeon. The Committee consisted of Drs. J. E. Ives, L. R. Thomson, Louis Schwartz, and, as scientific assistant, Mr. N. P. Bryan. Parenthetically we might point out that in the Committee appointed to perform a similar task for the Royal Navy (see review in the June number of this journal) it was not considered necessary to include any ophthalmologist.

The nature of the tests undertaken fall into three main groups: (1) Occupational and process studies; (2) illumination tests; (3) studies of defects of eyesight amongst post office operators. Several points of interest are to be noted in group 3, amongst others the occurrence of a number of cases of nystagmus. As an explanation it is stated that the variation in illumination was considerable, and that even when the average value was relatively high, the range for the same process was excessive, values well below one foot-candle being frequently recorded. A letter-separator (? sorter) reads on an average between thirty and forty addresses a minute, and his work may require adjustment of the ocular muscles as much as eighty times a minute. The Committee records that the acuteness of vision is usually lower for the letter-separators than for employees generally and that this discrepancy tends to increase with years of service. "*It appears, therefore, that the intensive* eywork done in this department tends to cause more rapid deterioration of vision." *This statement seems to claim that a* healthy eye can be injured by intensive work. We should be inclined to think that the cause for the deterioration is more likely to be found in the defective illumination conditions described in the report. An interesting commercial calculation is given in which it is pointed out in detail how in one particular institution the cost of raising the lighting value from 3.6 to 8 foot-candles would be about 1 per cent. of the wages bill, while the increased efficiency would probably reach about 4.4 per cent. of that sum. The report concludes with a series of recommendations, one of which is to the effect that the eyes of post office workers should be examined annually by an eye specialist and any defects recorded and corrected. We fear it would be too much to hope that our own post office might adopt that suggestion.

National Health Insurance—Ophthalmic Benefits

Now that ophthalmic benefits as part of the Insurance Act administered by medical practitioners with a knowledge of ophthalmology is likely to come into partial operation very shortly, it would be as well to give a short account of the negotiations which have led up to their adoption and to the conditions under which they are to be administered.

The Council of British Ophthalmologists in October, 1921, had their attention called to the fact that optical appliances and treatment were being provided by various approved societies through opticians. The Council at once communicated with the Ministry of Health and pointed out that the surplus funds of the approved societies contributed for medical treatment were being used for this purpose and suggested that the Ministry should take immediate steps to prevent such negotiations being undertaken, until at least the report of the Departmental Committee on the "Causes and Prevention of Blindness" had been considered. The Ministry replied that the societies which adopted the additional benefit of optical treatment were able to do so because the department had not insisted on the optical appliances only being made on the production of a prescription from a qualified practitioner or hospital. This correspondence was sent on to the Committee on the "Causes and Prevention of Blindness," and their recommendation was given in their report (Departmental Committee on the Causes and Prevention of Blindness, 1922). Nothing further arose out of the recommendations, and requests came from various bodies of ophthalmic surgeons throughout the country to the Council of British Ophthalmologists to take further steps. The Council applied to the Ministry of Health pointing out that ophthalmic appliances should be prescribed by a medical man, and that their original rules and orders should be adhered to. As the result of this communication a deputation was sent to the Ministry of Health at the end of March, 1924, when the matter was discussed. Shortly after this the Council of British Ophthalmologists joined forces with the British Medical Association and a committee from both bodies was formed and subsequently representatives from the Ophthalmic Benefits Committee were added. Discussions took place at the Ministry of Health, and the following arrangements were proposed and were subsequently accepted by the representatives of the approved societies, and come into force on July 1, 1925. Members of those approved societies which provide ophthalmic benefit must, in the first instance, consult their insurance practitioner, who, in suitable cases, will give them a recommendation to their approved society to the effect that the symptoms found arise from defects of the

eyes or call for examination and report on the condition of the eyes, and that the society should refer the patients to an ophthalmologist on the approved list. This "approved list" is to be supplied and maintained by the British Medical Association, and is to contain the names of medical practitioners who satisfy certain now familiar criteria which will be found in detail in paragraph 24 of the Evidence of the Association, presented to the Royal Commission on National Health Insurance (Supplement, February 28, 1925, p. 73). Besides satisfying these criteria doctors on the list must be willing to accept an inclusive fee of £1 1s. for each insured person sent to them by approved societies.

Lists of medical men who possess the necessary qualifications and are willing to undertake the work, are being prepared by the British Medical Association, and names should be sent in to the secretary of the British Medical Association. These lists at present contain about 500 names.

CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES

TO BE HELD IN LONDON, JULY 14, 15, 16 and 17, 1925.

Under the auspices of the Ophthalmological Society of the United Kingdom and its Affiliated Societies.

The full programme of this Convention to be held in London on July 14, 15, 16, and 17, 1925, is now in our hands. The President is Mr. E. Treacher Collins; the General Secretary, Mr. C. B. Goulden; the Secretary of the Committee for Scientific Business and Publications, Mr. R. Foster Moore; of the Committee for General Arrangements and Entertainments, Mr. J. F. Cunningham; of the Committee for Finance and Registration, Mr. Leslie Paton; of the Banquet Committee, Mr. M. S. Mayou; of the Museum Committee, Miss Ida Mann.

The following members of affiliated Societies will be willing to assist overseas members who, after the Convention, are desirous of visiting the parts of the country mentioned:

Oxford.—P. H. Adams, The Cardinal's Hat, 6, Holywell, Oxford.

Cambridge.—Arthur Cooke, Grove Lodge, Cambridge.

North of England Ophthalmological Society.—P. J. Hay, 35, Glossop Road, Sheffield.

Midland Ophthalmological Society.—H. W. Archer-Hall, 54, Newhall Street, Birmingham.

For Birmingham.—J. Jameson Evans, 41, Newhall Street, Birmingham.

For Leamington, Stratford-on-Avon and Coventry.—T. Harrison Butler, 81, Edmund Street, Birmingham.

For Sulgrave Manor.—E. Harries-Jones, 16, Castilian Street, Northampton.

For Worcester.—B. H. St. Clair Roberts, Cwm House, Castle Street, Worcester.

Scottish Ophthalmic Club.—W. C. Souter, 9, Albyn Place, Aberdeen; E. H. Cameron, 7, Darnaway Street, Edinburgh; James Conway, D.S.O., M.C., 36, Berkeley Street, Glasgow.

Irish Ophthalmological Society.—Louis Werner, 31, Merrion Square North, Dublin; W. C. MacFetridge, 27, Upper Fitzwilliam Street, Dublin.

NOTICE

The Convention will be held at University College, London (Gower Street, W.C.1).

The Registration Bureau, Thos. Cook & Son's Office, The Scientific Museum and the Trades Exhibition will be in the Anatomical Department, the entrance to which is in Gower Street. The Meetings will be held in the Memorial Hall.

On arrival, every member of the Convention is requested to attend as soon as possible at the Registration Bureau and enter his or her name and address during the Convention.

Those who have not already paid their membership fee are requested to do so to Mr. Leslie Paton, 29, Harley Street, London, W.1, without further delay. Cheques to be made payable to the Treasurer, Sir Arnold Lawson.

Those wishing to read papers before the Convention are requested to communicate with Mr. Foster Moore, 91, Harley Street, London, W.1, at an early date. A typewritten copy of the paper with an abstract suitable for immediate publication **must** be sent in before June 14.

No paper will be accepted which has been published elsewhere, and no communication to the Convention must occupy more than twenty minutes. In order to prevent the crowding out of papers and to allow of discussion it will be necessary that this time limit be strictly adhered to. This, however, will not preclude the publication of longer papers in full in the Transactions.

The Scientific Museum Committee appeal for the loan of suitable material illustrative of all aspects of ophthalmic work. Macroscopical and microscopical specimens, drawings, photographs, instruments, charts and diagrams will be welcome. They will be arranged in subdivisions, amongst others, Human and Comparative Anatomy, Embryology and Pathology, Congenital Anomalies, Historical Instruments and Portraits. Those willing to contribute are requested to communicate as early as possible with Mr. Affleck Greeves, 23, Wimpole Street, London, W.1.

Mr. C. J. Anderson has been appointed Controller of the Trades Exhibition; all enquiries connected with it should be addressed to him at 5, Racquet Court, Fleet Street, E.C.4.

Thos. Cook & Son, Ltd., have been appointed official agents of the Convention in connection with travel and Hotel arrangements. Their office during the Convention will be in the Anatomical Department at University College. Tickets can be obtained there for the chars-à-bancs excursions to institutions of ophthalmic interest, and to Oxford and Cambridge. Other arrangements can also be made respecting transport or conveyance.

It is very desirable to know beforehand the number of members likely to attend some of the entertainments and excursions. All registered members who wish to

participate in them are, therefore, requested to fill up and return the accompanying forms to the General Secretary, Mr. C. B. Goulden, 79, Portland Place, London, W.1, as soon as possible.

Programme

Monday, July 13

9 p.m. to 12.—Reception at the Royal College of Surgeons of England, Lincoln's Inn Fields, by the President, Sir John Bland-Sutton and Council.

Tuesday, July 14

At the Memorial Hall, University College.

10 a.m.—Address of Welcome by the RT. HON. NEVILLE CHAMBERLAIN, Minister of Health.

Reception of Delegates.

The American Ophthalmological Society.—Dr. G. E. de Schweinitz.

The American Medical Association, Ophthalmic Section.—Dr. W. R. Parker.

The American Academy of Ophthalmology and Oto-Laryngology.—Dr. Walter B. Lancaster.

The Toronto Academy of Medicine.—Prof. I. M. McCallum.

The Montreal Ophthalmological Society—Prof. W. G. M. Byers.

The Ophthalmological Section of the British Medical Association, Victoria, Australia.—Dr. J. Kingland Anderson.

Award of the Nettleship Prize to Professor S. E. Whitnall.

Presentation of the Critchett Memorial Presidential Badge.

President's Opening Address on "The Elimination of Eye Disease."

11 a.m. to 12.30 p.m.—Papers.

2 p.m.—Visits to Institutions of Ophthalmic interest, for which chars-à-bancs will start from University College. Tickets to be obtained at the Registration Bureau.

Excursion I. (Limited to 100 members.)
1. St. Margaret's Hospital, Leighton Road, Kentish Town.
2. London County Council Myopia School, Sebbon Street, Upper Street, Islington.
3. Royal London Ophthalmic Hospital, Moorfields.

Excursion II. (Limited to 100 members.)
1. St. Dunstan's, Inner Circle, Regent's Park.
2. The Central London Ophthalmic Hospital.

Excursion III. (Limited to 50 members.)
1. Royal Westminster Ophthalmic Hospital.
2. National Library for the Blind, 18, Tufton Street, Westminster.

Excursion IV. (Limited to 100 members.)
1. The Royal Eye Hospital, St. George's Circus.
2. The Royal Normal College for the Blind, South Norwood.

Excursion V. (Limited to 50 members.)
White Oak Ophthalmia School, Swanley.

8.30 p.m.—Reception at the Royal Institution of Great Britain, Albemarle Street, W., by the President, His Grace the Duke of Northumberland, and Managers.

9 p.m.—Sir William Bragg, K.B.E., D.Sc., F.R.S., the Director of the Institution, will deliver an address on "Thomas Young and his Work."

Wednesday, July 15

9 a.m. to 12.30 p.m.—At the Memorial Hall, University College.—Papers.

3 p.m.—Garden Party, given by Sir William and Lady Lister, at Aubrey House, Campden Hill.

8.30 p.m.—At the Memorial Hall, University College. A Symposium on "The Evolution of Binocular Vision,"

By the following speakers:

Sir Charles Sherrington, O.M., G.B.E, P.R.S.
Sir Arthur Keith, F.R.S.
Sir Frederick Mott, K.B.E., F.R.S.
Prof. Elliot Smith, F.R.S.
Prof. S. E. Whitnall.

Thursday, July 16

9 a.m. to 12.30 p.m.—At the Memorial Hall, University College.—Papers.

3 p.m.—General Meeting of the Convention at which the re-establishment of International Ophthalmological Congresses on the pre-war basis will be considered.

5 p.m.—The Bowman Lecture, by Sir John Herbert Parsons, C.B.E., F.R.S., "The Foundations of Vision."

8.30 p.m.—Reception at the Wellcome Historical Medical Museum, Wigmore Street, by the President of the Convention.

Friday, July 17.

9 a.m. to 12.30 p.m.—In the Memorial Hall, University College. Discussion on "The Microscopy of the Living Eye."

To be opened by:

Dr. Gordon Byers, of Montreal.
Dr. Arthur J. Bedell, of Albany, U.S.A.
Mr. Harrison Butler, of Birmingham.
Mr. Basil Graves, of London.

2 p.m. to 5 p.m.—Papers.

6.45 p.m. for 7 p.m.—Banquet at the Guildhall, King Street. City. Reception in the Art Gallery. H.R.H. the Duke of Connaught, K.G., has graciously consented to be the guest of the Convention. Tickets, to be obtained at the Bureau, price 35s. including wine.

Saturday, July 18

EXCURSIONS TO OXFORD OR CAMBRIDGE.

Railway tickets at reduced fares can be obtained from Thos. Cook & Son.

OXFORD.

Members will have the opportunity of lunching in Hall at Keble College, for which a small charge will be made.

The Members of the Oxford Ophthalmological Congress are arranging for parties to be personally conducted round the various colleges and other buildings of interest, and will afterwards entertain them at tea in the grounds of Magdalen College.

CAMBRIDGE.

Members will have the opportunity of lunching in Hall at Trinity College, for which a small charge will be made.

Parties will afterwards be conducted round the colleges and other buildings of interest.

The Vice-Chancellor of the University, Dr. Seward, will entertain a party of members at tea at Downing College.

The following is a list of the papers which have been already sent in, arranged alphabetically, in accordance with the names of the authors, and not in the order in which they will be taken:

G. F. ALEXANDER.
(1) "Control of the Eye in Operations."
(2) "Ocular Physiological Torsion."

MARY BUCHANAN.
"A Case of Congenital Dermoid."

W. BURDON-COOPER.
"The Behaviour of the Crystalline Lens System in Artificial Cycloplegia and its Influence on Refraction."

T. HARRISON BUTLER.
"Some Changes that are seen with the Slit-Lamp in Eyes that have been Injured or Operated upon."

E. C. CARMICHAEL and P. SARGENT.
"The Treatment of Pituitary Tumours."

ERNEST CLARKE.
"Myopia."

JAMES COLLIER.
"Schilder's Encephalitis Periaxialis."

R. C. DAVENPORT.
"The Recovery of the Visual Fields in Pituitary Disease without Operation."

A. EDWARD DAVIS.
"The Lens Antigen Treatment of Cataract."

FREDERICK A. DAVIS.
"Hereditary Eye Defects in Rabbits Experimentally Produced."

GEORGE DERBY and J. HERBERT WAITE.
"The Light Sense in Glaucoma."

ALEXANDER DUANE.
"Projection, Visual and Postural."

J. HERBERT FISHER.
"A Consideration of the Intra-ocular Lymph Paths."

L. WEBSTER FOX.
"Surgical Treatment of Conical Cornea."

HARRY FRIEDENWALD and JONAS S. FRIEDENWALD.
"The Preparation of an Aseptic Field for Operations on the Eye."

D. V. GIRI.
"Some Remarks on Milk Injections together with Reports of Cases treated."

CLARK W. HAWLEY.
"Retinoscopy."

THOMSON HENDERSON.
"The Postural Activity and Evolution of the Ciliary Muscle: A Study of the Mechanism of Accommodation."

MALCOLM L. HEPBURN.
"The Teaching of Ophthalmology."

H. HERBERT.
"Anatomical Predisposition to Glaucoma."

VAN DER HOEVE.
"Glioma Retinae."

P. CHALMERS JAMESON.
"Principles of Recession Operations and Scleral Fixation in the Correction of Squint."

E. L. JONES.
"The Advantage of Immediately Producing a Maximal Physiologic Lymphatic Reaction in Dangerously Wounded Eyes."

RICHARD KERRY.
"Pathogeny of Glaucoma."

ARNOLD KNAPP.
"Late Results of Intra-capsular Cataract Extraction."

H. MAXWELL LANGDON.
"The Blood Chemistry of Patients with Primary Cataracts."

F. PARK LEWIS.
"Preventive Ophthalmology, its Scope and Possibilities."

IDA C. MANN.
"The Embryology of the Lens and the Correlation of it with Slit-Lamp Appearances."

M. S. MAYOU.
"Siderosis."

R. FOSTER MOORE.
"An Intra-cranial Unruptured Aneurysm, Diagnosed during Life, which had caused Rupture of the Optic Nerve."

LESLIE PATON and IDA C. MANN.
"The Development of the Oculo-motor Nuclei."

J. N. RHOADES.
"Precise Vernier Axis Finder."

JOHN ROWAN.
"Glaucoma: Thrombosis of the Central Vein as the Cause of a Failure of Successful Iridectomy after 17 years."

A. H. H. SINCLAIR.
"Intra-capsular Extraction of Cataract with some New Instruments, and Cinematograph Demonstration."

DAVID W. WELLS.
"The Training of the Fusion Faculty."

F. A. WILLIAMSON-NOBLE.
"An Unusual Case of Irido-cyclitis."

ALAN C. WOODS.
"Sympathetic Ophthalmia."

R. E. WRIGHT.
"A Rare Congenital Bilateral Malformation of the Conjunctiva."

S. LEWIS ZIEGLER.
"History of Discission; Complete Division of the Lens by the V-shaped Method."

ABSTRACTS

I.—DISEASES OF CORNEA

(1) **Seefelder (Innsbruck).—The origin of congenital staphyloma of the cornea. (Zur Entstehungsweise der angeborenen Hornhautstaphylome.)** Abs. *Zentralb. f. d. gesam. Ophthal.*, Heidelberg Congress, July 1, 1924.

(1) **Seefelder** gives an account of the histology of a congenital staphyloma of both eyes in a six days' old cat. In both eyes the staphyloma occupied a symmetrical position and involved the greater half of both corneae. The tissue of the staphyloma was composed of newly-formed tissue in which the pupillary portion of the iris and the pupillary membrane were completely involved. The staphyloma was distinctly separated from the rest of the cornea by a definite zone of demarcation. There was a purulent infiltration of the cornea and this extended to the iris and ciliary body. No trace of the lens could be found in either eye. The retina showed in both eyes in nearly its whole extent a duplicate formation of the external nuclear layer. The case proves that there really is an intra-uterine suppuration of the cornea, an occurrence which has been doubted and even denied from many sources. The absence of the lens and the doubling of the nuclear layer of the retina can be considered as a consequence of this process (casting out of the lens and the formation of folds in the retina due to shrinking and unequal growth). With regard to the cause of the inflammatory process nothing could be discovered.

S. SPENCE MEIGHAN.

(2) **Wright, Major R. E., I.M.S. (Madras). — Conservative operative treatment of large staphylomata of the cornea.** *Arch. of Ophthal.*, January, 1925.

(2) **Wright** has found iridectomy useless in most cases of extensive staphylomata. He, therefore, practises the following operation : The eye is decompressed in the same way as in corneo-scleral trephining except that a disc is removed at the margin of the staphyloma so putting the posterior chamber—when it exists —into direct communication with the subconjunctival tissues. The flap of the conjunctiva is replaced in the usual manner. A fine-pointed electric cautery is then used to make a number of radiating scars from the centre to the periphery of the staphyloma, and a more thorough umbilicated cauterization is done at the centre.

The staphyloma shrinks up during the next few weeks. Should there be even a small area of transparent cornea, the region adjoining it is selected for the trephining because it may be possible under such circumstances to leave an iridectomy which gives the patient more light. The cornea has rarely to be split, one merely dissects up the conjunctiva until it is impracticable or dangerous to go further. The after-treatment is by instillations of saturated aqueous solution of picric acid and the use of boric ointment and a pressure pad. The bandaging is kept up for several weeks.

F. A. WILLIAMSON-NOBLE.

(3) **Bussy, Leopold.—Myxoma of the cornea.** (**Le Myxome de la Cornée.**) *Arch. d'Ophtal.*, January, 1925.

(3) "Tumours of the cornea containing mucoid tissue and labelled, rightly or wrongly, myxomata, are rare." After this opening sentence **Bussy** refers to six reported cases; of these he eliminates three, expresses doubt about the fourth and accepts only one, that of Mitvalsky, as genuine.

He reports a case in a man, 66 years of age, under his own observation, giving the clinical features and notes of a thorough histological examination of the growth. He feels justified in describing it as an interstitial myxoma of the cornea. A short, but apparently complete bibliography is appended.

J. B. LAWFORD.

(4) **Chou, C. H. (Changsha, China). Tuberculosis of the cornea-sclera.** *Amer. Jl. of Ophthal.*, September, 1924.

(4) **Chou's** case is of interest because, in a sense, it supports Verhoeff's theory that tubercle bacilli may pass through the pars ciliaris retinae in leucocytes and endothelial cells, and be carried on by the aqueous to infect the filtration angle. Pathological examination of an eye removed for iridocyclitis revealed tuberculous nodules in the lower periphery of the cornea and in the filtration angle. The spaces of Fontana and the canal of Schlemm were markedly infiltrated with epithelioid cells and lymphocytes, and, in the lower quadrant, this infiltration was directly connected with the corneal nodules. The iris was not much affected, there were some nodules in the ciliary body and the choroid was normal. There was, however, definite infection of the sclera, especially in its deeper layers, though, clinically, there was no evidence of scleritis. Chou's opinion is that the primary focus was in the sclera, the infection being blood-borne.

F. A. WILLIAMSON-NOBLE.

(5) **Whitham, Lloyd B. (Baltimore, M.D.).—Epithelial dystrophy of cornea an ocular manifestation in diabetes.** *Amer. Jl. of Ophthal,,* October, 1924.

(5) **Whitham** summarizes current literature to the effect that epithelial dystrophy of the cornea occurs most frequently in middle age, usually affects females, is often associated with slight transitory rises of intraocular tension, and that the course of the degeneration and diminution of vision is progressive, despite any known form of treatment.

In a case examined by Fuchs there were small vacuoles in the corneal epithelium and newly-formed fibrous tissue between it and Bowman's membrane. The tissue was homogeneous, showing no signs of hyaline or mucoid degeneration, the epithelium over it was thinner than normal, and not keratinized. In a case of Uhthoff's Bowman's membrane was absent and the superficial layers of the epithelium degenerated. Whitham's first case was a negro, aged 53, first seen in 1913, with "a small central superficial herpetic epithelial loss," which was clear and uninfiltrated. A faint white crescent was present in the mid-periphery of the cornea, and the epithelium in this region was oedematous. There was some slight ciliary congestion and the tension was normal. The crescent later encircled the cornea, which became somewhat anaesthetic. The urine contained 0.5 per cent. of sugar. Wassermann and tubercle tests were negative. Six days on the sugar-free diet resulted in complete restoration of the corneal epithelium. He left hospital to return in six weeks with a bad relapse, having in the meantime partaken freely and indiscriminately of starch-containing foods. Eighteen days of dieting brought about complete restoration of the corneal epithelium, and during this time he had some transitory rises of intraocular tension. Subsequent observation showed some improvement, and when last seen the vision was 20/50.

In the second case, a man aged 53, there was a history of trouble with the left eye for the preceding year, the right eye being normal. The lids were swollen, conjunctiva congested, corneal epithelium oedematous with central desquamation. Diabetes had been present from six to eight years, the urine containing 3.3 per cent. of sugar. Under insulin injections, miotics and other local treatment the tension was reduced to normal, the cornea became clearer, the epithelium regenerated and the congestion diminished. The condition of the eye during the next few months showed some improvement, but details are not given as to the visual acuity.

In discussing the cases, the author points out the possible analogy between the bullous condition of the corneal epithelium and the desquamative dermatitis so constantly observed in diabetes.

F. A. WILLIAMSON-NOBLE.

II.—DISEASES OF CONJUNCTIVA

(1) **Blatt, Nicolas (Roumania).—Curetting of the conjunctiva (abrasio conjunctivae) in chronic catarrhal conjunctivitis. Kürettage der Bindehaut (abrasio conjunctivae) bei den chronisch-katarrhalischen Conjunctivitiden.)** *Wien. klin. Wochenschr.*, No. 52, 1922.

(1) Assuming that the objective and subjective symptoms in many cases of chronic conjunctival catarrh, which resist the usual treatment, are caused by degenerative changes in the epithelium and subepithelial tissue, **Blatt** in these cases thoroughly scrapes the diseased parts and declares himself satisfied with the results. After anaesthesia with 5 per cent. cocain solution, injection of 1 c.c. of 1 per cent. solution of novocain (to which have been added a few drops of adrenalin) in the upper and lower angles of reflection, there follows a systematic curettage, under moderate pressure, of the conjunctiva of the tarsal region and of the angles of reflection either with a full-bellied scalpel or with a delicate sharp curette of the kind used in gynaecological work. A dressing is applied for several hours. Acute conjunctivitis forms the only contra-indication to this treatment.

V. ST. JOHN.

(2) **Michail, Prof. D. (Roumania). — Haematogenous staphylococcic conjunctivitis with multiple miliary abscesses. (Conjonctivite staphylococcique hématogène à abcès miliares multiples.)** *Ann. d'Ocul.*, Vol. CLXI, p. 676, 1924.

(2) **Michail** describes in detail a case of acute staphylococcic conjunctivitis and reviews the literature of abscess of the conjunctiva due to staphylococcus. He points out that *exogenous* staphylococcic conjunctivitis is sometimes the result of occlusion by bandaging of the eyes after operation. Sometimes a spontaneous blepharo-kerato-conjunctivitis of phlyctenular type arises which is of grave prognosis from its tendency to perforation of the cornea. *Endogenous* origin of such conjunctival affections is much more rare. Michail was able to find 19 cases in the literature, mostly under the title of "abscess of the conjunctiva," occasionally "metastatic abscess of the sclerotic," or "purulent scleritis." One very characteristic point of these cases is the appearance of a single abscess, and, occasionally, from two to four. These are localized exclusively to the bulbar conjunctiva in the neighbourhood of the limbus. Generally, the superficial layers of the sclerotic are also involved. Occasionally, exophthalmos is present. In most cases a mild inflammation of the iris, ciliary body or choroid is associated. In two, perforation of the sclerotic took place, and in one, a central

abscess of the cornea; this latter necessitated enucleation. In most cases the prognosis is favourable. Commonly, a distant focus of sepsis is to be found in these cases. The most frequent is furunculosis, which was found in 37.5 per cent. of the cases. Occasionally, broncho-pulmonary lesions were found. A remarkable feature is the existence of good general health in association with the severe ocular lesion. Generally, the conjunctival lesions appeared within a few days of the development of the distant septic foci. The staphylococcus aureus was found in the pus from the conjunctival abscess in most cases. Blood-culture was positive only in one other case besides that of Michail. The patient, recorded in detail, was a woman of 28 years of age, who for three days before she was seen had watering of the eyes, with fever, and inflammation of the tonsils. The most important points noted in this case are as follow:

(1) The appearance of numerous grey nodules on the conjunctiva of the lids and fornices, without any involvement of the bulbar conjunctiva.

(2) The superficial localization of these nodules, which resembled trachoma follicles, excepting for the presence of miliary abscesses in their centre.

(3) The presence of preauricular and submaxillary non-suppurative glandular enlargements.

(4) The rapid and benign development of these lesions.

The staphylococcus aureus was found in the conjunctival secretion, in the material obtained by curetting the nodules in the conjunctiva and also from blood-culture. Various experimental investigations were carried out upon rabbits and guinea-pigs with positive results.

The histological appearance of the nodules showed the presence of a diffuse mononuclear infiltration with a small abscess in the middle. One of the most characteristic points in this case is the presence of a large number of miliary abscesses, placed superficially in the conjunctiva without any implication of the bulbar conjunctiva, whereas, typically, the conjunctival metastatic abscess due to staphylococcus occurs chiefly in the neighbourhood of the limbus and to the number of from one to four.

HUMPHREY NEAME.

(3) **Lehrfeld, Louis (Philadelphia).—Ophthalmia neonatorum.** *Amer. Jl. of Ophthal.*, May, 1923.

(3) **Lehrfeld,** as a result of statistical investigations comes to some interesting conclusions with regard to ophthalmia neonatorum: While the average incubation period is three to

seven days, it may in exceptional cases be as long as three weeks. This may be accounted for by the use of prophylactics at birth, or it may be due to low virulence of the infecting organisms. The possibility of these late infections being due to infected hands, linen, etc., is discounted on the grounds that gonorrhoeal ophthalmia practically never occurs in the nursing mother, as it should do, were the infection carried by these means. The use of a single instillation of silver nitrate at birth is deprecated. It gives a feeling of false security and may in itself set up a conjunctivitis which may mask the symptoms of an oncoming true ophthalmia or be mistaken for a sign of infection. Also, since only a scant majority of cases occur during the first few days, the prophylaxis should be such as to combat the late cases.

The author suggests the instillation of several drops of a bland preparation of silver, such as argyrol 25 per cent. (freshly prepared) repeated on three successive days after birth, followed in each instance by thorough flushing of the eyes.

F. A. WILLIAMSON-NOBLE.

(4) **Jacqueau (Lyon), and Lemoine (St. Quentin).—Cases of ocular diphtheria. (Diphtéries oculaires.)** *La Clin. Ophtal.*, July, 1923.

(4) **Jacqueau** and **Lemoine** report two cases of conjunctival diphtheria each of which was uniocular and in each of which there were no other local manifestations of diphtheria. The diagnosis was difficult mainly because the bacteriological examination was negative at first, though afterwards positive. As soon as the condition was recognized, which does not seem to have been possible till after the positive bacteriological report, anti-diphtheritic serum was employed by injection. In both cases the corneae were affected (neuro-paralytic) and suffered opacities, but otherwise the patients recovered.

ERNEST THOMSON.

(5) **de Peyrelongue (Beyrouth).—An exceptionally severe case of spring catarrh. (Sur un cas de catarrhe printanier à forme exceptionnellement grâve.)** *La Clin. Ophtal.*, October, 1923.

(5) Spring catarrh sometimes develops into an extremely severe affection involving the cornea and menacing the vision. **de Peyrelongue** records a case of this type very fully, so fully in fact that justice can hardly be done to it in an abstract. Suffice it to say that the author has had the case under observation for about ten years. From 1913 to 1919 the corneae became more and more involved. From 1919 to 1922 the condition was about stationary,

while since 1922 an improvement has set in. The gelatinous masses covered two-thirds of the right cornea leaving only an oval area nine millimetres by six. In the left cornea the central clear area was so small that the pupil reaction could not be observed. This was in 1916. The left eye was in such a desperate condition as regards vision that operation was decided upon and the gelatinous masses were with difficulty excised. They were largely adherent to the cornea and left a rough and bleeding surface behind. There was no reaction and cicatrization occurred rapidly. The cornea remained opaque but soon began to present a reflecting surface. At the end of a period, which the reviewer is unable to determine owing to misprinting of the years, the left cornea had notably cleared in the centre and the patient could count fingers at four metres as against one metre before operation. A variety of local treatments had been applied in the course of the case, but the author himself is quite sceptical as to their value. A bibliography which includes no English names is appended to the article.

ERNEST THOMSON.

(6) **Waldeck, E. A.—Parinaud's infectious conjunctivitis.** *Jl. of Amer. Med. Assoc.*, September 6, 1924.

(6) **Waldeck** reports a case of this rare condition. It is a subacute inflammatory condition of the conjunctiva and is always associated with an inflammatory enlargement of the preauricular or other regional lymphatic glands, which may suppurate. The glandular enlargement is synchronous with the onset of the ocular symptoms, and differentiates the condition from other conjunctival inflammations. The conjunctival lesions consist of focal areas situated immediately beneath the epithelium, infiltrated with lymphocytes and plasma cells, and causing large granules or elevations, which may be polypoid. In Waldeck's case the disease began in the second eye as soon as the inflammation had subsided in the eye first attacked; it is, however, almost always unilateral. The results of animal experiments with material taken from the conjunctiva were negative; the leptothrix described by Verhoeff in the *Arch. of Ophthal*, 1913, as present in the nodules, was not observed.

A. F. MACCALLAN.

(7) **Morax, V. (Paris).—Conjunctivitis due to micrococcus catarrhalis. (La conjonctivite à micrococcus catarrhalis.)** *Ann. d'Ocul.*, Vol. CLXI, p. 401, June, 1924.

(7) **Morax** reports two cases of conjunctivitis due to the micrococcus catarrhalis. In both, the condition was clinically of a mild type and had a benign course; in one case, the duration

was for four days, in the other for ten days. The striking features are: (1) That the conjunctivitis is so mild; and (2) the presence of an organism which resembles the gonococcus. In the first case, an acute coryza was present; in neither was there any urethritis. Morax considers it of great importance if the organism be found to be present in the naso-pharynx. It may be so found even after its presence in the conjunctiva has ceased. Arguments are brought forward against the possibility that the organism may be the meningococcus. Full details as to the cultural methods that should be adopted are given. In the bibliography which is referred to, attention is drawn to the rarity of description of cases with a complete bacteriological report.

HUMPHREY NEAME.

(8) **Wibaut and Smit.—The fight against trachoma in Amsterdam in recent years. (La lutte contre le trachome à Amsterdam dans les dernières années.)** *Ann. d'Ocul.*, Vol. CLXI, p. 641, 1924.

(8) **Wibaut** and **Smit** point out that trachoma has been endemic in Amsterdam for at least half a century. A commission for investigation worked from 1914 to 1917, and found in the schools of Amsterdam, among 66,418 Christian children, 0.6 per cent. trachoma; in schools among 7,062 Jews, 8.8 per cent. trachoma. Their evidence goes to show that infection takes place in most cases before the age of six years. That is, that it is essentially a family disease and that the school plays a very minor rôle in spreading the infection.

Diagnosis. During the investigation, systematic examination of every child in the various schools of the poorer classes was carried out. Although the schools for children of somewhat better class work-people are in the same district as that in which the bulk of the cases of trachoma occur, yet these schools are quite exempt from the disease. In follicular conjunctivitis, the follicles are transparent, of uniform size and regularly arranged. The trachoma granulations, on the other hand, are larger, crowded, with the aspect of boiled sago grains, and scattered irregularly over the conjunctiva of both lids. The rule that trachoma is more marked in the upper fornix than follicular conjunctivitis is not reliable. The upper fornix is often affected by a marked degree of follicular conjunctivitis, and, on the other hand, the lower lid often has very well-marked trachoma granulations, whereas the upper lid may be but slightly affected. Diagnosis, in doubtful cases, is confirmed by the results of treatment. Those which recover rapidly are not included in the list as trachoma. Also the vast majority of the cases of trachoma yield on expression of the nodules a typical

gelatinous material. It is usually expressed from the conjunctiva by means of the thumb-nails.

Treatment. The treatment in this fight against trachoma is carried out in the out-patient department of hospitals: (1) The most important point is the pursuit of the granulations. Expression is carried out on several occasions. In the case of isolated granulations, which are difficult to express, incision and curettage are employed. The more regularly the granulations are expressed, the more rapid is the cure. (2) Concurrently with expression, friction of the conjunctiva is applied by means of dry tampons of wool. This procedure probably removes mucus and infected epithelium. (3) The instillation of one to two per cent. silver nitrate solution, or two per cent. ichthargan. This is considered of very much less importance than the direct attack on the granulations by expression and by massage. At the beginning of the treatment, two or three attendances with treatment are required weekly. Later, one attendance per week is sufficient.

Tables show the remarkable change in the number of cases of trachoma and a great reduction in the number of new cases, year by year, since the commencement of the campaign in 1918. The campaign followed immediately upon the investigations by the commission between 1914 and 1917. Details of organization and control of the children, and of the families, are given.

HUMPHREY NEAME.

(9) **Guibert (La Roche-sur-Yon).—A case of subconjunctival filaria. (Un cas de filaire sous-conjonctivale.)** *La Clin. Ophtal.*, October, 1923.

(9) **Guibert** adds another to the very short list of cases of subconjunctival filaria recorded in France. The case was that of a missionary from Loango, who had already had several filariae removed from other parts of the body, and who, feeling a little irritation about his left eye detected the filaria with a mirror. He consulted Guibert. Guibert saw the filaria crawling along under the upper bulbar conjunctiva from the temporal to the nasal side at the rate of half a centimetre per second. Realizing that at this rate there was every chance of his losing the worm if he waited for cocain, Guibert procured assistance for the support of the lid and seized the worm in forceps along with the conjunctiva. He then divided worm and conjunctiva with a cataract knife and picked out the two portions with fine forceps.

ERNEST THOMSON.

III.—DISEASES OF UVEA

(1) **Lagrange, F. (Bordeaux). — Non-follicular tuberculous choroido-retinitis. (De la Chorio-Rétinite tuberculose afolliculaire.)** *Arch. d'Ophtal.*, July, 1924.

(1) **Lagrange,** in a previous communication, has described the clinical appearances of this condition (*Arch. d'Ophtal.*, October, 1923, abstracted *Brit. Jl. of Ophthal.*, Vol. VIII, p. 554, 1924).

In the present article he deals with the pathological conditions found in an eye which was sectioned, and also adds some clinical details and the results of treatment. The ophthalmoscopic details in the previous article are recapitulated:

1. The lesions are more often found in the macular or perimacular regions.
2. They are not isolated and distinct patches, but diffuse areas with some raising of the retina over them.
3. They are very faintly pigmented or not pigmented at all, so distinguishing them from the syphilitic condition.
4. The vitreous is affected very slightly and only at the earliest stages of the disease, and even the retina shows only an early and evanescent oedema. The condition is in other words confined almost to the choroid, vision being affected later because of destruction of the retinal pigment layer. In each of these ways, the condition is the exact reverse of what is found in the syphilitic infection. The degree of visual acuity is usually a source of astonishment to the observer, and is explained by the fact that the retina is relatively intact at the macula, and the scotomata are for the most part relative only.

Several cases and opinions are cited from the literature bearing on this particular form of tuberculous affection, notably by Guisberg, Schultz Zedden, Treacher Collins, and Francisco Fernandez, but they tend rather to show that the condition has received only scanty notice.

The eye actually examined microscopically was from a patient who had died of phthisis. The posterior segment alone was implicated (ciliary body and iris being healthy) and showed a generalized whitish non-pigmented appearance. The sections of which reproductions are given show four phases in the evolution of the disease.

Fig. 1. Increase in thickness of choroid due partly to increase in vascularity and partly to lymphocytic infiltration, the membrane of Bruch, retinal pigment layer and rest of retina seeming intact.

Fig. 2. Shows a commencing sclerosis in the vascular choroid, not extending quite up to the sclerotic. Bruch's membrane is still distinctly visible, but the retinal pigment epithelium is almost

destroyed and there are marked changes in the rod and cone and outer molecular layers.

Fig. 3. Shows a more advanced stage with the sclerosis affecting all the retinal layers except the nerve fibre layer, and there is a commencing adhesion of the choroid to the sclera though for the most part the supra-choroidal space is still visible.

Fig. 4. Shows the complete retino-choroidal cicatrization. The section passes through a mass of fibrous tissue with here and there a few venous channels. The absence of pigment is especially noteworthy and in fact, clinically, this is the point which the author wishes chiefly to emphasize.

After giving the clinical history and appearances of several cases illustrating the condition described, the monograph ends with a note on the treatment with tuberculin (Pasteur). Importance is attached to carefully graduated doses, starting with 1/1,000 milligramme and increasing to a maximum of 1 milligramme.

The temperature and weight should be carefully watched, and to avoid relapses, a short series of injections should be renewed from time to time.

O. GAYER MORGAN.

(2) **Verhoeff, F. H. (Boston).—Mycosis of the choroid following cataract extraction, and metastatic choroiditis of the other eye, producing the clinical picture of sympathetic uveitis.** *Arch. of Ophthal.*, November, 1924.

(2) **Verhoeff's** case occurred in a woman, aged 30 years, who was operated on for congenital cataract in the right eye. There was loss of vitreous, the wound did not heal evenly and the eye remained inflamed. Within six weeks the left eye was also involved and later a typical plastic uveitis developed in both. One year after operation both eyes were removed for relief from pain. On pathological examination, a similar condition was found in the two eyes, namely, chronic massive choroiditis and advanced irido-cyclitis. The inflammatory tissue contained numerous small abscesses, also foci of giant cells surrounded by epithelioid cells. On staining with phosphotungstic acid haematoxylin, the abscesses were found to contain bodies consisting of a central stem with bulbous swellings giving off short club-like processes. In the larger abscesses as many as forty of these bodies could be seen, in the smaller, only one or two; while in the completely necrotic abscesses, none were found. The organism resembled actinomyces in many respects, but differed in being considerably smaller and in having no typical streptothrix filaments. Careful systemic examination of the patient failed to reveal any evidence of actinomycotic infection and the organisms would, therefore, appear to have an affinity for uveal tissue. They evidently gained access to

the right eye through the operation wound, became sensitized to uveal tissue and were then carried in the blood stream to the other eye where they found conditions favourable to their growth. The important points brought out by this case report are two: First, that it affords definite proof of an organism implanted in one eye gaining access to the blood stream and apparently failing to grow anywhere in the body except in the other eye. Secondly, that it affords a possible clue to the pathogenesis of sympathetic ophthalmitis. The changes observed in the present case differed from those seen in typical sympathetic inflammation by the presence of the abscesses, and the greater intensity of the inflammation. Verhoeff has been unable to find any definite microorganisms in the lesions of sympathetic ophthalmitis, and in the present case organisms were found only in the abscesses, and never in the numerous foci of epithelioid cells. It is unlikely, if not impossible, that these foci could be produced by toxins alone, and it is reasonable to suppose that microorganisms in some form not yet recognizable were present within them, the organisms being some pleomorphic form of the fungus found in the abscesses. It, therefore, follows that similar microorganisms may be present in the lesions of sympathetic uveitis.

F. A. WILLIAMSON-NOBLE.

(3) **Guiral, Rodolfo and Guiral, Rodolfo Julio.—Sympathetic ophthalmitis, aetiology, pathology and treatment of the same. (La oftalmia sympatica, etiologia, patogenia y tratamiento de la misma.)** *Arch. de Oftal. Hisp.-Amer.*, September, 1923.

(3) The **Guirals**, if we read their opening statement correctly, have had the misfortune to see more than twenty cases of sympathetic ophthalmitis in eighteen months; they claim that those affected have recovered their vision, not only in the exciting eye, but also in the sympathizing eye. For the study of their cases they divide them into those arising from operative trauma, from accident with solution of continuity, and from accident without solution of continuity. Among the operation cases cataract holds the chief place, for the most part hernia of the iris was present, but in one case no entanglement of the iris appears to have been present. One case of acute glaucoma, operated on according to the method of Elliot, was followed by this grave complication on the twenty-eighth day following the operation. Only one case of trauma without solution of continuity is included in their series, a gun shot injury. The authors hold to the theory of anaphylaxis as a cause for the disease and quote Elschnig that sympathetic ophthalmitis is due to a reaction of an anaphylactic kind which affects the sympathizing eye, due to the sensitization of the organism with an antigen produced in the exciting eye.

Experimenting on rabbits with injections of uveal pigment they claim by using pigment of the same subject to have reproduced most exactly the conditions in which sympathetic ophthalmitis appears in man. They also claim that the cure of the disease by means of injections of autoserum supports the theory of anaphylaxis. The results of their experiments on rabbits are given at some length. With regard to treatment the authors acknowledge the debt due to Professor Edmond Escomel of Arequipa (Lima), and refer to the latter's work on autoserumtherapy, published in the *Revista de Medicina y Cirugia de la Habana* (year not stated). Doses of two or three c.c. of autoserum are given by injection every day or every other day, and we gather that it is of no use in late cases where the iris is atrophic; in such cases excision of the blind painful eyes is indicated.

The authors end their paper with the following conclusions:

(1) Sympathetic ophthalmitis is a specific anaphylactic process from organ to organ, provoked by the uveal pigment which enters the circulation, digesting the specific antibodies not only in the organ first diseased but wherever pigment exists, a condition which the eye up till then normally fulfils.

(2) The injection of autoserum (integral of Escomel) desensitizes the diseased eye, permitting a cure.

(3) Once cured, all the interventions necessary can be practised on each eye without fear of ophthalmitis.

(4) We submit to the consideration of this sixth Latin-American Congress this work, feeling that at the present time we have no other treatment as scientific or efficacious as that which we have now finished explaining for the cure of sympathetic ophthalmitis, preserving vision in both eyes.

The above is a free translation of the concluding part of the paper; I believe that it represents the author's statements. Those who are interested can easily obtain the volume in question from the Bowman Library and read it for themselves, the Spanish is not very difficult.

R.R.J.

(4) **Motolese, *Prof. Dott.* F. (Ancona).—The early diagnosis of sympathetic ophthalmitis by means of the Gullstrand lamp. (*La diagnosi precoce* dell'oftalmia simpatica mediante la microscopia con la lampada di Gullstrand.)** *Boll. d'Ocul.*, Dec., 1924.

(4) **Motolese** describes the case of a man who, on September 8, 1923, injured his right eye with a whip, and who, soon after, noticed diminution of vision in the left eye. The patient became insane, and was seen by the author in an asylum on January 20, 1924. The injured eye was shrunken and slightly tender. The

other eye had vision=6/24. No abnormality was seen by focal illumination, nor with the ophthalmoscope. With the Gullstrand lamp nothing abnormal was seen in the anterior part of the eye, but in the vitreous, adhering to the fibrillae, and also covering the back of the lens in great numbers, were abnormal cell inclusions, appearing as brilliantly white spots of various sizes. These remained unchanged until the end of February. When the patient was seen on May 28 (about four months after the first observation) there was no trace of these white spots.

Treatment. The shrunken eye was excised on January 21. Eight intravenous injections of neosalvarsan were given, and, later, injections of strychnin.

At the end of February, the vision was=6/12 nearly.

ARTHUR GRIFFITH.

IV.—DISEASES OF LENS

(1) **Zentmayer, Dr. William (Philadelphia).—The pathogenesis of Vossius' ring cataract.** *Amer. Jl. of Ophthal.*, September, 1924.

(1) **Zentmayer,** after quoting Vossius' original theory, and the objections to it, alludes to Hesse's explanation of this condition. The latter, as a result of slit-lamp study, states that the lesion is in reality disciform in character. The opacity is composed of fine brown dots which resemble haematogenous, rather than uveal pigment. Zentmayer, during an advancement operation, accidentally perforated the sclera, causing a sector of the iris to be discoloured by a trickling of blood over its surface. On completion of the operation, examination with an electric ophthalmoscope revealed a slight haze in the pupillary area. One week later, a typical Vossius ring cataract had developed. The eye was too irritable to allow of slit-lamp examination, but the case affords strong evidence in favour of Hesse's theory.

F. A. WILLIAMSON-NOBLE.

(2) **Baldwin and Bartel.—The relation to hyperglycaemia of cataract.** *Jl. of Amer. Med. Assoc.*, September 27, 1924.

(2) **Baldwin** and **Bartel** have studied thirty-nine consecutive cases of cataract at the New York Infirmary for Women and Children, and eighty-eight consecutive cases of cataract at the Herman Knapp Memorial Eye Hospital, as to the presence of sugar in the blood. They find that all exhibit the phenomenon of hyperglycaemia. In the first series of cases only is there reference to

the presence of glycosuria; here eight cases had glycosuria out of a total of thirty-nine exhibiting hyperglycaemia. In the second series of cases the percentage of blood sugar varied from 0.330 to 0.084. They consider the cases studied as too few to form the basis of more than a preliminary report.

A. F. MACCALLAN.

(3) **Anderson, J. R.—A contribution to the study of lamellar cataract.** *Med. Jl. of Australia*, May 31, 1924.

(3) **Anderson** gives the pedigree of 79 members of the Australian branch of the family in which Nettleship* studied the incidence of lamellar cataract. In none of the Australian cases was there associated retinitis pigmentosa. He says:

"There is, I think, *a definite relation between the diameter of the opacity and the time of its development.* If we remember the lamellar structure of the lens and the fact that those epithelial cells which are lengthening into fibres, are the most susceptible to injury, it is easy to imagine how a period of general body malnutrition may lead to a series of defective fibres and consequent opacity. With the passage of time and the development of new transparent fibres, the cortex surrounding the opacity becomes thicker and this opaque zone gradually sinks towards the lens centre. Other epithelial structures show the effects of malnutrition, but in these, as in the nail, the defective area in time disappears. In the lens, because of the low degree of metabolic change and its lamellar structure, there is little tendency for the opacity to be absorbed and the defect is stored up. As the lens transparency depends on the evenness of and low absorptive power of the lamellar fibres, the slightest irregularity is detected as an opacity. Influences which make for lens tissue destruction, acting in the early weeks of intra-uterine life may lead to congenital aphakia or to defective capsular formation and changes in the earliest forming axial antero-posterior fibres may lead to either a congenital central cataract or a fusiform defect. Those influences acting later will produce changes in the neighbourhood of the primitive and Y-shaped suture of the embryonal lens nucleus. Vogt's researches have revealed in 25 per cent. of all eyes examined by the slit-lamp a congenital non-progressive nuclear cataract which he terms the anterior axial embryonal cataract. In notes kept of lenses examined during the last two years I find I have recorded cases which belong to this group. Lamellar cataract may be produced, and has been produced experimentally, when dystrophic influences affect the lens at a later stage of ante-natal life."

A. F. MACCALLAN.

*Trans. Ophthal. Soc., Vol. XXIX, 1909.

(4) **Meyer-Steineg, Th.—Experiments and results in the non-operative treatment of early senile cataract. (Versuche und Ergebnisse einer nicht-operativen Behandlung des beginnenden Altersstars.** Abs. *Zentralb. f. d. gesam. Ophthal.*, July, 1924.

(4) Non-operative treatment of cataract has been in existence for some time. **Meyer-Steineg** refers especially to the work of von Senn, who points out that operation can only be performed when the cataract is advanced, and that in many cases operation is not practicable or is refused. Again, an eye operated on for cataract is left without the lens and is therefore not a normal organ. He justifies the non-operative therapy on these grounds. Although our knowledge of the aetiology is still obscure there is no reason why therapy should not be in advance of this knowledge.

The author points emphatically to the following points: (1) Cloudiness in the lens can spontaneously disappear (transitory appearance in congenital clefts); (2) the cornea and the vitreous are therapeutically influenced; (3) here the effect is indirect as one cannot apply the agent directly; (4) iodine compositions are specially retrogressive in their action; (5) there are different types of cataract which must be differentiated both from a morphological and from a genetic basis.

He considers that the subcapsular type is the most typical form. In this he agrees with Hess in opposition to Vogt. This type is connected with epithelial damage and is on account of this accessible to medication. In 501 patients the author treated 876 eyes with at least 5/30 visual acuity. The results were as follow: 117 (15 per cent.) got worse; 246 (28 per cent.) remained stationary; 513 (58 per cent.), improved. The degree of improvement in the most unfavourable cases was from 5/30 to 5/20, and in the most favourable from 5/20 to 5/5. Objectively there was a retrogressive change from the fully developed cloudiness, and this could be demonstrated with the ophthalmoscope. Pictures of this were made. Sometimes the results are transitory.

General therapy consisted in the giving of iodine in small doses. Locally, the instillation of potassium iodide, sodium iodide, and dionin. The most important part of the procedure is the subconjunctival injection of phakolysin as supplied by L. W. Gans, in Oberursel (soluble animal lens albumen, iodide of potassium and sodium and sodium chloride). The author is of opinion that by this means the normal inner interchanges in the lens are restored, and the retro-formation of the forming cystin into cystein takes place. The subcapsular forms reacted most favourably, the supranuclear less so. The nuclear types remained stationary.

S. SPENCE MEIGHAN.

(5) **Heine, L. (Kiel).—Cataract associated with tetany and myotonia.** (**Über Tetanie und Myotonie-katarakte.**) *Zeitschr. f. Augenheilk.*, Vol. LV, p. 1, February, 1925.

(5) Out of a series of 130,000 eye cases, in which were 2,236 lenticular opacities, **Heine** has gathered five cases of lamellar cataract associated with tetany and ten complicating myotonia.

The five cases associated with tetany were all middle aged adults; four were females, one was a male. Two of them were of the strumipriva type, the first of which is interesting in that the lenticular degeneration did not appear until a very long interval —twenty years—after thyroidectomy. In the second case, operation was followed in a few months by cataract and tetany.

Of the cases occurring in association with myotonia, three were females and seven were males, the series including a mother and son of the same family. The author gives a full clinical history of these cases, but the interest of the article lies in the account of the microscopic structure of the lens as revealed by the slit-lamp. He quotes Künsel (*Arch. f. Ophthal.*, Vol. CXIV, 1924) as having reported four such cases, all females, after thyroidectomy, whose lenticular structure all showed substantial similarity. They differ, however, from those under review, and, moreover, Heine's cases differ among themselves. Those of the tetany class show two different types—a subcapsular zone, anteriorly and posteriorly, of fine opacity, internal to which is a series of concentric rings one to three in number; or a clear cortical layer with a central mass of nuclear granular opacity. Those in the myotonia class also differed, even in the familial case already mentioned. Whereas the mother had a subcapsular zone of granular opacity (resembling the appearance of Künsel's four cases), the son had a simple posterior cortical cataract.

The author, therefore, concludes that until more clinical material has been gathered, no definite opinion can be given as to the peculiar structure—if any—which these opacities assume.

W. S. DUKE-ELDER.

(6) **Major and Curran.—Diabetic cataracts in an infant.** *Jl. of Amer. Med. Assoc.*, February 28, 1925.

(6) **Major** and **Curran** describe the case of a child of eleven months old placed under treatment on account of glycosuria, in whom both lenses had become opaque since birth. The patient was placed on a diet of whole cow's milk, 5 per cent. vegetable purées and cod-liver oil, and was given from six to ten units of insulin a day. Discission operations were performed in each eye with apparently good visual results, and with disappearance of the pre-existing nystagmus.

A. F. MACCALLAN.

(7) **Elschnig (Prague).—The intracapsular extraction of senile cataract. (Die intrakapsuläre Extraktion des Altersstares.)** Abs. *Zentralb. f. d. gesam. Ophthal.*, July, 1924. Heidelberg Congress.

(7) **Elschnig** at the Heidelberg Congress held at Jena, had come to the conclusion that the intracapsular extraction was the operation of choice. In this he agreed with the opinion of Smith and Stanculeanu. He, however, believed that it could only be performed in combination with an iridectomy. Since then Elschnig has performed the "Stanculeanu-Torocksche" intracapsular extraction. In this operation traction is made on the lens capsule by means of forceps, and simultaneously pressure is applied to the cornea. He has performed forty-five without and forty-four with an iridectomy. In the former group he had 8 per cent. iris prolapse in spite of peripheral incision in the iris and 6 per cent. vitreous prolapse. Recently he has performed the Barraquer extraction in forty-four cases and forty of these without iridectomy. In no case had he iris prolapse, but vitreous prolapse in 6 per cent. His first operations, which were not technically perfect, are included in this. He considers that this last method is the best and least dangerous of all intracapsular extractions. Without doubt it is far superior for immature cataracts to the extracapsular extraction. This superiority is due to anatomical reasons and the examination of many eyes pathologically has proved this. Among those examined were four on which intracapsular extraction had been performed.

S. SPENCE MEIGHAN.

(8) **Rochon-Duvigneaud.—Large capsulectomy in the operation of extraction of cataract. (La kystectomie large dans l'opération de la cataracte.)** *Ann. d'Ocul.*, Vol. CLXI, p. 484, July, 1924.

(8) **Rochon-Duvigneaud** points out that examination with the microscope of sections of eyes that have had capsulotomy performed on them, post-mortem, shows a definite ectropion of the anterior capsule. After operation on the living, this ectropion of the capsule becomes, by cicatrization, abolished and the wound of the capsule is drawn together or closed. After this narrowing or closure of the capsule wound, proliferation of the epithelium and folding of the capsule take place, resulting in considerable interference with vision. Briefly, capsulotomy preserves the capsular sac intact with all its inconveniences. The operation of capsulectomy, on the other hand, especially if it be carried out with Kalt's forceps, by taking a very wide grip of the anterior surface of the lens, has the effect, as it were, of opening the box wide by removing the lid. A very large part of the anterior capsule

is removed, so that there is no possibility of closure of the capsule wound and the lens substance in the periphery is exposed after delivery of the cataract to the action of the aqueous humour.

Out of the fifty-four capsulectomies in the operation of cataract extraction, forty-two showed capsules varying in size from 5 × 2 mm. to 7 × 6 mm., an aperture of considerable size in the anterior surface of the lens. Very occasionally, extraction of the lens in its capsule takes place by this procedure. Rochon-Duvigneaud had ten such cases of which one was complete extraction without rupture of the capsule. In none of these was there any loss of vitreous.

Special benefit results from this procedure in cases of soft cataract, that is, the cases which are particularly prone to the development of early secondary cataract. This, as stated, is owing to the exposure of the soft peripheral lens matter to the aqueous. Visual results in these cases vary from 0.7 to 0.8 or even more in a large number of cases.

HUMPHREY NEAME.

(9) **Stanka (Prague).—Marginal infiltration, and corneal ulcer following extraction of senile cataract. (Radinfiltrate und Ulcera der Hornhaut nach Altersstarextraktionen.)** Abs. *Zentralb. f. d. gesam. Ophthal.*, July, 1924. Heidelberg Congress.

(9) One finds occasionally after an extraction operation, infiltrations of the cornea at the limbus which are superficial and punctiform in character. They are characterized by their rapid course and the absence of any symptoms referable to the cornea or the conjunctiva. In addition they are completely painless. Insensitiveness of the bulbar conjunctiva is an accompaniment. They appear on an average three to four days after the operation. Ulceration takes place, as a rule, the following day, and progression towards healing in a further three days, with the process complete in a further two days. The normal corneal lustre is completely restored. In 4,651 extraction operations, there were 39 cases. There does not seem to exist any general predisposition to these infiltrations. It is noteworthy that one of the affected cases was under sixty years. The bacteriological examination of scrapings has always been negative. It is not probable that any of the manifold antiseptics in use, nor the various methods of operating is a factor. Elschnig refers to them in his book and they are also described by Bachstetz. The latter author ascribes these conditions to disturbances of nutrition, but **Stanka** points to two instances which would indicate that this is not so: (1) The position of these infiltrations is always in that part of the limbus which has not been interfered with surgically; (2) they are always marginal, and

at this position the nourishment of the cornea is better than centrally. He is, therefore, of opinion that external injury is a cause as is also the secondary hyperaemia of the marginal plexus after the adrenalin effect has passed off. On account of this latter occurrence there is an oedema of the conjunctiva at the corneo-scleral junction. The formation of a groove thus takes place between this chemotic conjunctiva and the cornea. In this groove, lacrymal fluid and leucocytes collect. Maceration of the epithelium thus takes place and this gives rise to the condition described. Factors favouring its production are, cocain, the trauma to the cornea in the massage of the cornea in the delivery of the lens, and the lids not being closed after operation. As the course of the condition is a benign one and the healing of the wound is not interfered with, no therapy is necessary.

S. SPENCE MEIGHAN.

BOOK NOTICE

Anales de Oftalmologia, Vol. I, No. 1.

This is the first number of a resuscitated Spanish Journal of Ophthalmology. In 1894, the "Anales de Oftalmologia" was founded by Dr. R. del Castillo Quarticellers, but it was unfortunate, and after a run of two years it was dropped. Now it has reappeared under the editorship of Dr. R. del Castillo Ruiz of Madrid, assisted by a number of collaborators in Europe and South America.

The plan of the journal follows classical lines. Two original articles appear; the first, by Barraquer, is an enthusiastic plea for the operation of total cataract extraction as elaborated and practised by himself in his clinic at Barcelona. In the second, Poyales of Madrid, details his technique of dacryo-cysto-rhinostomy after dacryocystotomy, whereby he leaves an epithelialized tract between the conjunctival sac and the nose.

These papers are succeeded by clinical notes of interesting cases of a lymphosarcoma of the upper lid and of Parinaud's conjunctivitis respectively. Reports of scientific societies follow. The fourth section comprises a résumé of current literature. It is intended that these abstracts be made a special feature of the periodical, and the ophthalmic literature of the world has been divided up and apportioned to different sub-editors; for the British and American reports Dr. Poyales will be responsible. In this first issue recent French and German writings are abstracted.

The closing pages are devoted to biographical notices, the first to figure being the founder of the original "Anales" in 1894. On the whole, the new journal gives a pleasing impression, and, if the promise of this first number is maintained, it will form a worthy and authoritative expression of the best in Spanish ophthalmology. It runs to eighty-one pages of matter, is well printed on fine paper, generously illustrated, and well bound. It purports to come out monthly, and is obtainable from the Imp. de Cleto Vallinas, Luisa Fernanda, 5, Madrid. The annual subscription for foreign countries is thirty pesetas (or about 18s.).

CORRESPONDENCE

TINTS AND THEIR VALUE

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—Sir Arnold Lawson's interesting address on "Tints and their Value," in the March issue recalls some work on similar lines which I did in the Physiology Dept. of the University of Melbourne under the direction of Professor W. A. Osborne. The results were published in the "Medical Journal of Australia," September 2, 1922, page 268. Using A. Hilger's quartz spectrograph and an iron arc, various solutions, spectacle glass and living tissue of eyes, readings were made from the negatives. We did not go into the matter with the experience in the use of the spectrograph or to the extent to which Dr. Judd Lewis has now done, but the conclusions were relatively much the same. It was shown that cornea transmitted rays from 2938 Å in the white rabbit to 3046Å in the dog, while our lens readings varied from 3049Å in white rabbit to 3165Å in the bullock. Dr. Judd Lewis's readings are 2900Å for cornea and 3500Å for lens. The difference in lental readings may be due to the using in our case of crushed lens matter in the quartz containers—otherwise it seemed impossible to get the same thickness of lens (10 mm.) for all experiments.

Would Sir Arnold Lawson or Dr. Judd Lewis be good enough to give an opinion and also state what animals were used?

Yours faithfully,

LEONARD MITCHELL.

MELBOURNE, AUSTRALIA.
April 14, 1925.

CHANGES IN REFRACTION IN DIABETES

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—Dr. Reid's letter in your last issue gives me the opportunity in referring to this subject again to thank correspondents from different countries for their courtesy in supplying me with additional bibliography of reported cases of this condition. With my thanks I must also tender my apologies for overlooking their work. As the additional bibliography may be of interest I have appended it.

Dr. Reid refers to the group I classed as anomalous cases. In reality it is probable that no such group exists; it was made up of those which were impossible to classify at all, from lack of accurate information or control. As I understood them, Mr. Laws's cases were not anomalous; they were examples of hypermetropia occurring "soon after the institution of (diabetic) treatment"—*i.e.*, after a decrease in blood sugar content.

From the information available Dr. Reid's case cannot scientifically be classed at all, since sugar-data at the time of change were unknown; in this sense it is anomalous. The patient, however, seemed to have had a decreasing sugar-content before she was admitted to hospital, which Dr. Reid admits "seemed to have been a variable quantity, and easily controlled." I should suggest that it might well have been so at the time when hypermetropia occurred, and that, while with the information given no one can dogmatize, it might have varied "according to rule" as probably as "contrary to rule." The recovery under treatment is certainly what one expects.

Dr. Reid wonders if these changes may be due to some "disturbance" of the endocrine glands: the mechanism of the change he does not enlarge upon. The only way I can, if I may so express it, coerce these into a share in the phenomenon is this. All vital processes are, ultimately, energy transformations whose rate of interchange is biologically adapted by an extremely complex mechanism. It has been shown experimentally that iodine increases the conductivity of tissues by increasing the permeability of the inter- and intra-cellular membranes, and it is probable that, by thus acting as a sensitizer, the katabolic group of glands (of which the thyroid is the chief) act as controllers of permeability, and, through this, of reactivity and metabolism generally. Thus is produced the dull irresponsive cretin in contradistinction to the exquisitely responsive sufferer from Graves' disease. It would appear to follow that by an increase in the permeability of the epithelium of the lens capsule through overaction of these glands, any osmotic change would be facilitated.

Whether Dr. Reid has this in his mind I do not know; but it is evident that, even so, any influence of these glands is, in the present case as in metabolic processes generally, merely that of catalysers—they cannot be credited with responsibility for the fundamental cause. In the present state of our knowledge, I prefer to view the appeal to the endocrine glands with a large amount of suspicion. They tend to fulfil to the physician that very comfortable rôle of Ever-Available Last Resort that does the appendix to the surgeon and the endometrium to the gynaecologist.

Yours, etc.,

LONDON, W. W. S. DUKE-ELDER.
May, 1925.

BIBLIOGRAPHY—(*continued from page* 186).

44. **Kadinsky.** – *Klin. Monatsbl. f. Augenheilk*, Vol. XLIX, p. 524, 1911.
45. **Davis.**—Colorado Ophthal. Soc., Dec. 16, 1911.
46. **Wölfflin.**—*Klin. Monatsbl. f. Augenheilk.*, Vol. XLIX, p. 426, 1911.
47. **Rönne.**—*Klin. Monatsbl. f. Augenheilk.*, Vol. LIV., p. 207, 1915.
48. **Kiehle.**—*Ann. of Ophthal.*, Vol. XXVI, p. 504, 1918.
49. **Grönholm.**—*Fin. Läk. Hand.* (Schwedich), 1918.
50. **Enroth.**—*Fin. Läk. Hand.*, 1918.
51. **Ibid.**—*Fin. Läk Hand.*, 1920.
52. **Hagen.** – *Arch. f. Ophthal.*, Vol. CV., p. 203, 1921. (Quotes case from Schiötz.)
53. **Schynder.**—*Klin. Monatsbl. f. Augenheilk.*, Vol. LXX, p. 45, 1923.
54. **Rosenstein.**—*Klin. Monatsbl. f. Augenheilk.*, Vol. LXXII, p. 487, 1924.

[**Schiötz** (*Klin. Monatsbl. f. Augenheilk.*, Vol. LXVII, Beilageheft, 1921) reports a case of the sudden development of –4.5 D.S. of myopia in pregnancy with chronic nephritis and uraemic symptoms: recovery one week after delivery; diabetes excluded. This is interesting. In drawing a parallel between the aetiology of diabetic and albuminuric retinitis, I have already noted the osmotic derangement that occurs in nephritis.—D.E.]

OBITUARY NOTICE

JOHN FERGUSON CARRUTHERS, M.D.

WE regret to announce the death of John Ferguson Carruthers, who took up ophthalmology somewhat late in life. After an adventurous career in many parts of the world, Carruthers qualified as M.D. with honours at Edinburgh. He practised for several years at Revelstoke in British Columbia, where he was Medical Officer of Health. From 1903-5 he studied at Moorfields Eye Hospital, and then took up ophthalmic practice at St. Peter Port, Guernsey. Soon after the outbreak of the war he was appointed Ophthalmic Specialist at the Royal Herbert Hospital, Woolwich, where he remained till 1922. His duties in this post were extremely arduous, and it cannot be doubted that his unremitting work undermined his health. In 1922, he was appointed Ophthalmic

Specialist at Bagdad in the R.A.F., with the rank of Squadron-Leader, but did not take up the post, and shortly afterwards retired.

Carruthers was a man of wide and varied experience, of good judgment, and utterly reliable in all that he undertook.

NOTES

Honorary Degree, D.Sc.

AMONG the recipients of honorary degrees conferred by the University of Bristol on the occasion of the visit of the King and Queen to open the new University Buildings, was Sir John Parsons, F.R.S.

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Royal Society of Medecine. Section of Ophthalmology

THE following have been nominated for office, 1925-1926 :—*President* :—Sir Arnold Lawson, K.B.E., F.R.C.S. *Vice-Presidents*: E. Treacher Collins, F.R.C.S.; H. B. Grimsdale, F.R.C.S.; Leslie Paton, F.R.C.S.; Cyril H. Walker, F.R.C.S.; A. L. Whitehead, F.R.C.S.; Elmore W. Brewerton, F.R.C.S.; Ernest Clarke, F.R.C.S.; A. H. H. Sinclair, F.R.C.S. *Hon. Secretaries*: A. H. Levy, F.R.C.S.; M. W. B. Oliver, F.R.C.S. *Other Members of Council*: *Physicians*: Gordon Holmes, C.M.G., C.B.E., M.D.; Anthony Feiling, M.D.; E. Farquhar Buzzard, M.D. *Metropolitan Members*: J. W. H. Eyre, M.D.; M. H. Whiting, F.R.C.S.; M. W. B. Oliver, F.R.C.S.; P. G. Doyne F.R.C.S.; R. Affleck Greeves, F.R.C.S.; A. C. Hudson, F.R.C.S.; Montague L. Hine, F.R.C.S.; H. Rowé Jeremy, F.R.C.S.; F. A. Williamson-Noble, F.R.C.S. *Provincial Members*: G. Harvey Goldsmith, M.D.; G. H. Pooley, F.R.C.S.; J. A. Valentine, M.D.; A. J. Ballantyne, M.D.; R. J. Coulter, M.B.; J. Wharton, M.D. *Representative on Library Committee (Honorary Librarian of the Bowman Library)*: F. A. Williamson-Noble, F.R.C.S. *Representative on Editorial Committee*: A. H. Levy, F.R.C.S.

FUTURE ARRANGEMENTS

1925.

July 14-17.—Convention of English-speaking Ophthalmological Societies, in London.

July 21-24.—British Medical Association, at Bath.

October 6.—Midland Ophthalmological Society (Annual), at Birmingham.